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ROTEL®

Technical Manual

STEREO CONTROL AMPLIFIER

RC-5000

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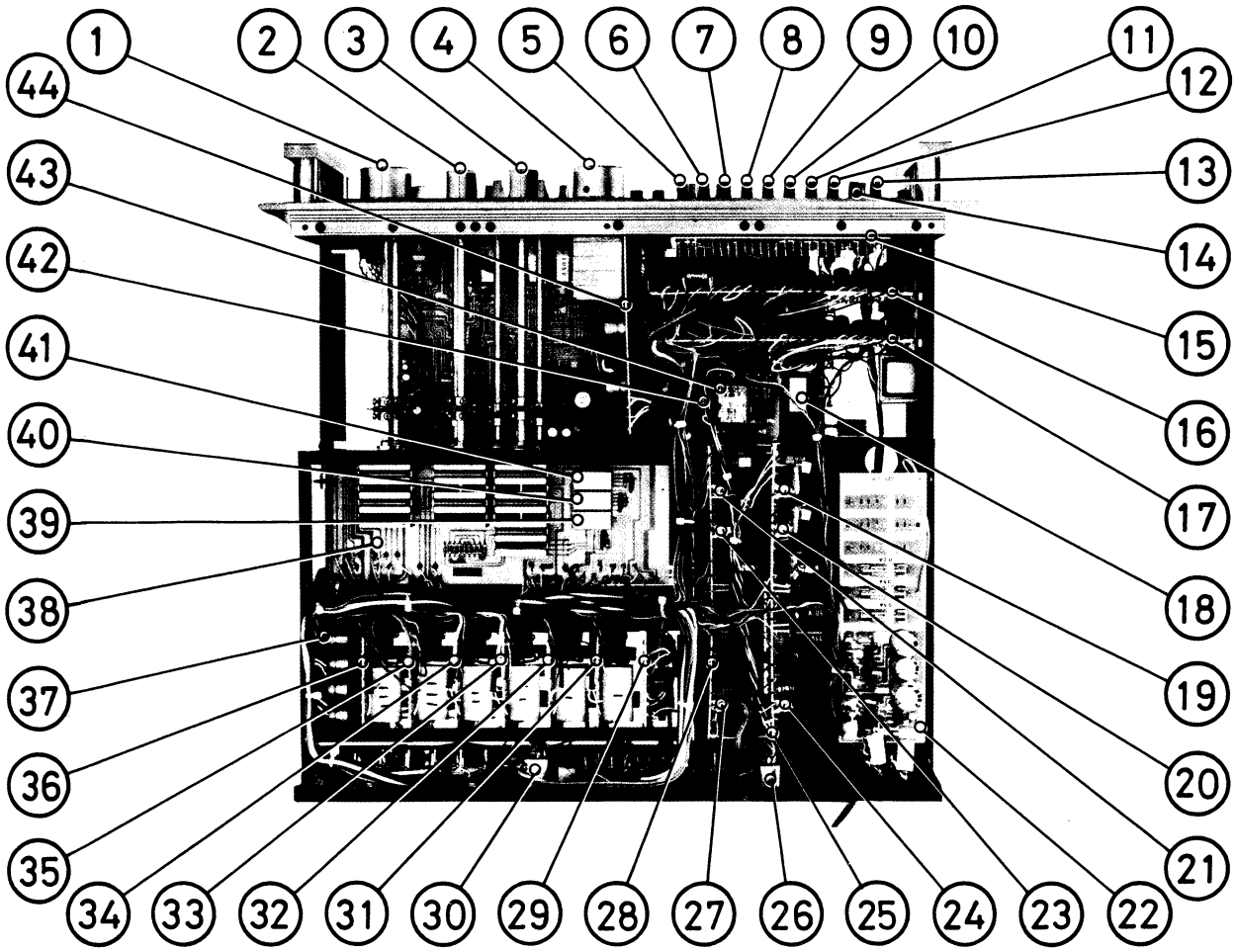
Serial No. Beginning
NB58581
R32352

Chassis Layout (Top View)
Chassis-Anordnung (Oberansicht)
Installation du châssis (vue de dessus)



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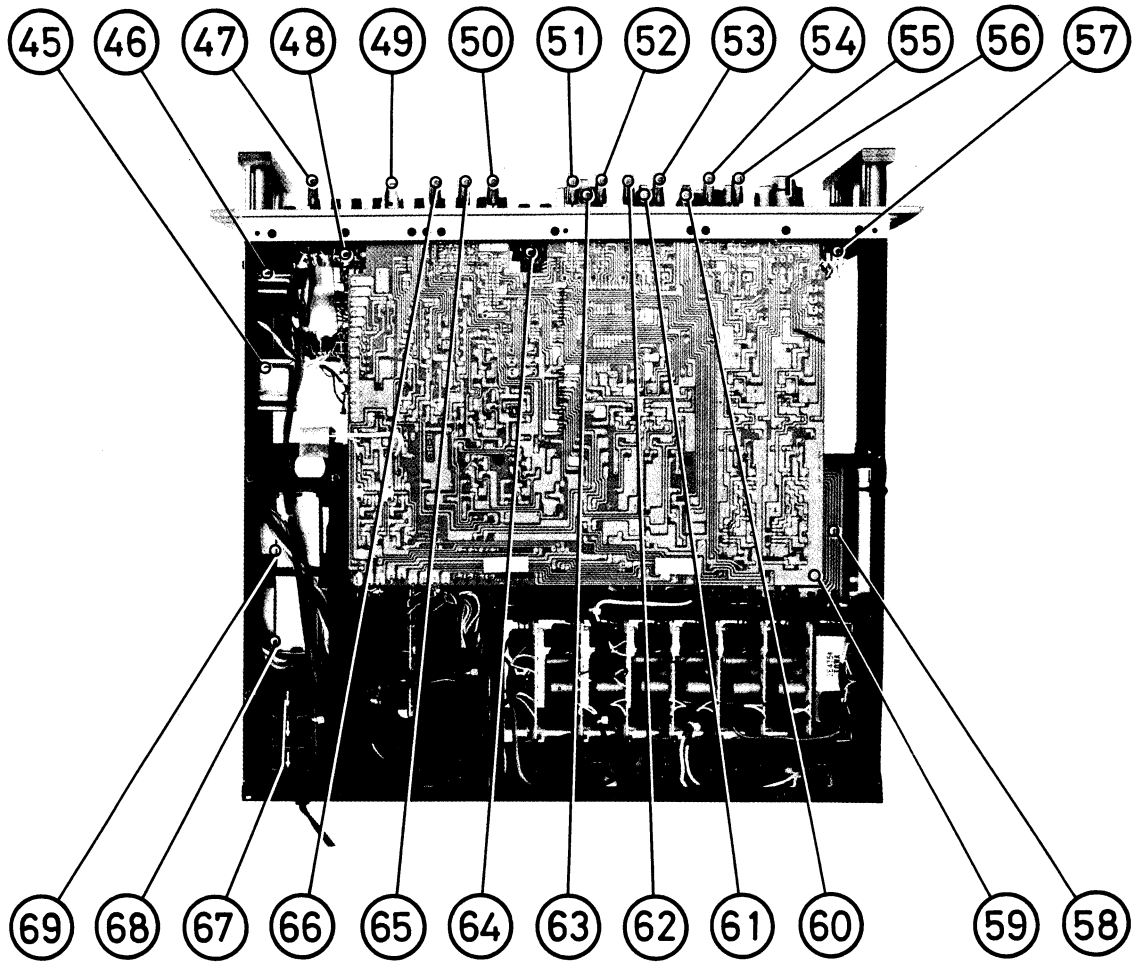
Installation du châssis (vue de dessous)



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67. LINE VOLTAGE SELECTOR
68. T001, L-CH POWER TRANSFORMER
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Adjustment Procedures

Instruments: DC Voltmeter, AC Millivoltmeter, Audio Generator, Oscilloscope, 600-ohm non-inductive resistors

Notes:

1) Be sure to use high precision instruments.
2) The AC Millivoltmeter should be able to read at least –90dB, and fitted up with IHF A-network.
3) The Audio Generator should be accurately calibrated for frequency and output level.

A. Adjustment of B Voltage of Phono Amp Power Supply

1. Connect the plus lead of the DC Voltmeter to pin +B5 on the Power Supply PC board (B-128) and the minus lead to the chassis ground. Set the meter in the 150V range and the polarity to +DC position.
   Adjust potentiometer VR901 on the Power Supply PC board (B-128) so that DC Voltmeter reads +60V.
2. Next, connect the plus lead to pin –B5, and switch the polarity of the meter to –DC position. (Or connect the minus lead to pin –B5, and the plus lead to the chassis ground.)
   Adjust potentiometer VR902 on the Power Supply PC board (B-128) so that the DC Voltmeter reads –60V.

Einstellung

Instrumente: Gleichstrom-Voltmeter, Wechselstrom-Millivoltmeter, Tongenerator, Oszillograph, induktions-freie Widerständ (600 Ohm)

Hinweise:

1) Verwenden Sie nur Instrumente mit hoher Genauigkeit.
2) Das Wechselstrom-Millivoltmeter sollte mindestens –90dB anzeigen und mit einem IHF A Netzwerk ausgestattet sein.
3) Die Frequenz und der Ausgangspegel des Tongenerators sollten genau eingestellt sein.

A. Einstellung der B-Spannung des Netzteils für den Phonoverstärker

1. Verbinden Sie das Pluskabel des Gleichstrom-Voltmeters mit dem Steckerstift +B5 auf der Netzteil-Leiterplatte (B-128) und das Minuskabel mit dem Erdanschluß des Chassis. Das Meter auf den 150V-Bereich und die Polarität auf +DC stellen. Stellen Sie nun das Potentiometer VR901 auf der Netzteil-Leiterplatte (B-128) so ein, daß auf dem Gleichstrom-Voltmeter eine Anzeige von +60V erhalten wird.
2. Das Pluskabel nun an den Steckerstift –B5 anschließen und das Voltmeter auf –DC stellen. (Oder das Minuskabel an –B5 und das Pluskabel an den Erdanschluß des Chassis anschließen.) Das Potentiometer VR902 auf der Netzteil-Leiterplatte (B-128) so einstellen, daß –60V am Gleichstrom-Voltmeter angezeigt werden.

Processus de réglage

Instruments: Voltmètre à courant continu, millivoltmètre à courant alternatif, générateur d'audio-fréquences, oscilloscope, résistances non inductives de 600 ohms

Remarques:

1) S'assurer que seuls des appareils de haute précision sont utilisés.
2) Le millivoltmètre à courant alternatif doit pouvoir donner une lecture d'au moins –90dB et doit être équipé d'un réseau IHF A.
3) Le générateur d'audio-fréquences doit être étalonné avec précision en ce qui concerne fréquences et niveau de sortie.

A. Réglage de la tension B de l'alimentation de l'ampli phono

1. Brancher le conducteur positif du voltmètre à courant continu à la fiche +B5 de la plaquette du circuit d'alimentation (B-128) et le conducteur négatif à la masse du châssis. Placer le compteur dans la zone 150V et régler la polarité sur la position +DC. Régler le potentiomètre VR901 de la plaquette du circuit d'alimentation (B-128) de facon à ce que la voltmètre à courant continu indique +60V.
2. Raccorder ensuite le conducteur positif à la fiche –B5 et commuter le compteur sur la position –DC. (Ou encore, connecter le conducteur négatif à la fiche –B5 et le conducteur positif à la masse du châssis.)
   Régler le potentiomètre VR902 de la plaquette du circuit d'alimentation (B-128) de facon à ce que le voltmètre à courant continu indique –60V.

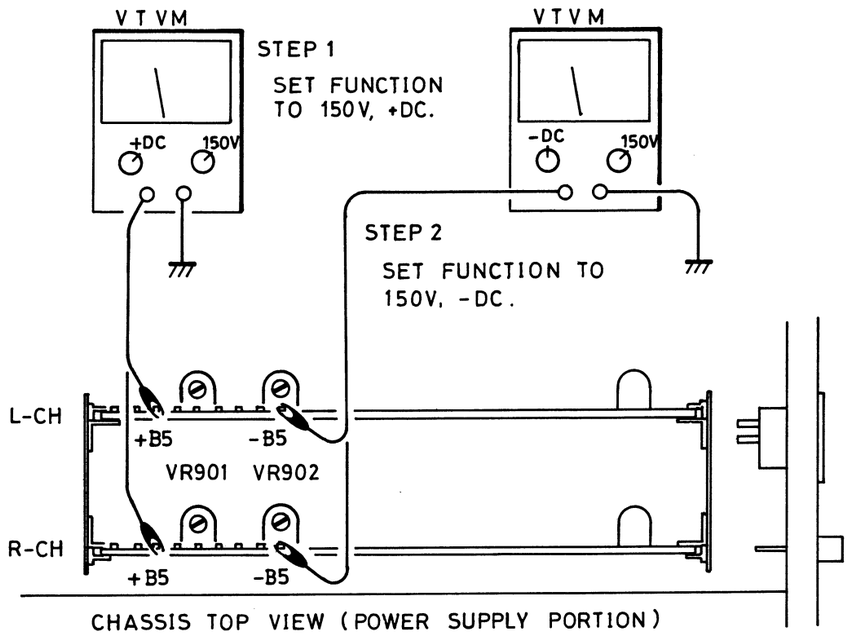


Fig. 1. Voltage Adjustment
Abb. 1. Spannungseinstellung
Fig. 1. Réglage de la tension

B. Adjustment of Phase of Cannon Output Amp

1. Connect 600-ohm load resistors to the Cannon Output connector (between pins 2 and 1, and between pins 3 and 1). Short pins 2 and 3, and connect the Oscilloscope across the load resistor. Set AUX-1 Input switch and Pre-Out switch on the rear panel (S17 and S18 in Schematic Diagram) to Cannon J. position.
2. Connect the Audio Generator to AUX-1 Cannon Input connector (across pins 2 and 1, or pins 3 and 1), and feed in 1,000Hz 75mV (sine wave) signal. Then adjust potentiometer VR903 on the Cannon Output and Power Supply PC board (B-128) so that the output waveform on the scope is minimum.
3. After completing adjustment, open the shorted pin. Connect the AC Voltmeter across 600-ohm load resistor, and make sure the output level at pins 2 and 1, and 3 and 1 is 500mV±1dB.
4. Carry out steps 1 to 3 above for the other channel.

NOTE:

Sound will not come out for about seven senconds due to the relay protection circuit built in to prevent loud pop noise when the Power switch is flipped on.

B. Phaseneinstellung des Cannon-Ausgangsverstärkers

1. Die Belastungswiderstände (600 Ohm) an den Cannon-Ausgangsanschluß anschließen (zwischen Stifte 2 und 1, und zwischen Stifte 3 und 1). Die Stifte 2 und 3 miteinander verbinden und den Oszillographen an einen Belastungswiderständ anschließen. Den AUX-1-Eingangsschalter und den Pre-Out-Schalter auf der Rückseite (S17 und S18 im Schaltungsschema) auf Stellung Cannon J. stellen.
2. Den Tongenerator an den AUX-1 Cannon-Eingangsanschluß anschließen (an Steckerstifte 2 und 1 oder 3 und 1) und ein 1kHz-75mV-Signal (Sinus) zuführen. Nun das Potentiometer VR903 auf der Cannon-Ausgang und Netzteil-Leiterplatte (B-128) so einstellen, daß die Ausgangswelle auf dem Oszillographen möglichst klein ist.
3. Nach dieser Einstellung die kurzgeschlossenen Steckerstifte 2 und 3 voneinander trennen. Das Wechselstrom-Voltmeter an einen 600 Ohm-Belastungswiderstand anschließen und nachprüfen, ob der Ausgangspegel an den Stiffen 2 und 1 (bzw-3 und 1) 500mV± 1dB beträgt.
4. Die Schritte 1 bis 3 für den anderen Kanal durchführen.

Hinweis:

Erst nach etwa 7 Sekunden erscheint ein Ausgangssignal infolge des eingebauten Relais-Schutzkreises zur Verhinderung von sehr lauten Signalen beim Einschalten des Netzschalters.

B. Mise en phase de l'ampli de sortie Cannon

1. Brancher les résistances de charge de 600 ohms à la borne de sortie Cannon (entre les fiches 2 et 1, et entre les fiches 3 et 1). Court-circuiter les fiches 2 et 3 et brancher l'oscilloscope à travers la résistance de charge. Placer le commutateur d'entrée AUX-1 ainsi que le commutateur Pre-Out du panneau arriére (S17 et S18 sur le diagramme schématique) sur la position Cannon J.
2. Raccorder le générateur d'audio-fréquences à la borne d'entrée Cannon AUX-1 (à travers les fiches 2 et 1, ou les fiches 3 et 1); envoyer un signal de 1.000Hz 75mV (onde sinusoïdale). Régler alors le potentiomètre VR903 de la plaquette du circuit de sortie Cannon et du circuit d'alimentation (B128) de facon à ce que la forme de l'onde de sortie soit réduite au minimum sur l'écran.
3. Après avoir terminé le réglage, libérer la fiche court-circuitée. Brancher le voltmètre à courant alternatif à travers la résistance de charge de 600 ohms et vérifier que le niveau de sortie aux fiches 2 et 1, et 3 et 1, est de 500mV à ±1dB.
4. Répéter les opérations 1 à 3 ci-dessus pour l'autre canal.

Remarque:

Le son ne sort pas pendant une durée d'environ 7 secondes à cause du circuit de protection à relais incorporé dans le but d'éviter le choc sonore lorsque l'on actionne le commutateur d'alimentation.

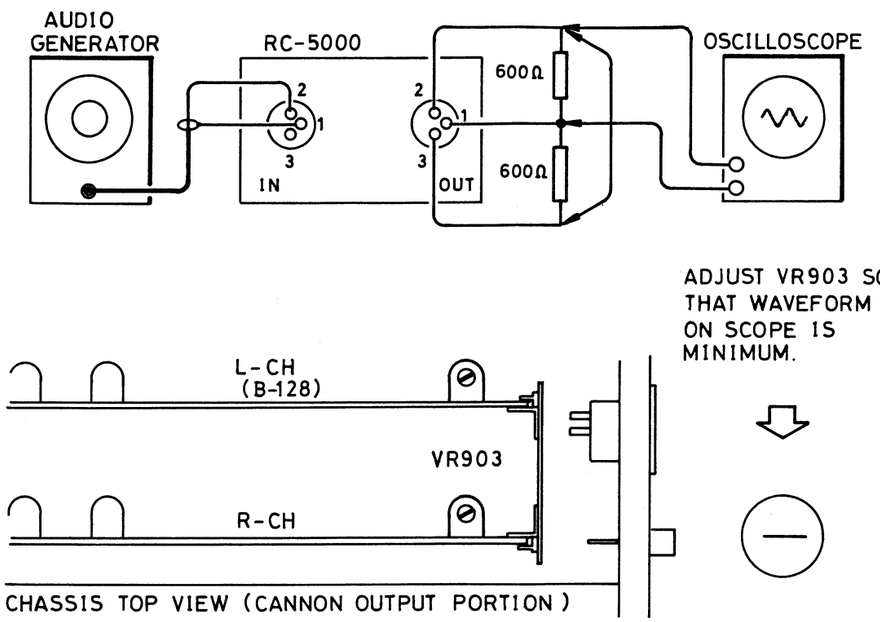


Fig. 2. Phase Adjustment
Abb. 2. Phaseneinstellung
Fig. 2. Mise en phase

Specifications
Technische Daten
Caractéristiques

A. PHONO EQUALIZER AMP SECTION (measured at TAPE OUT)

1. Output Voltage (at 1kHz)
   Rated Output:
   Pin Jack Output 150mV
   DIN Socket Output 50mV
   Maximum Output:
   Pin Jack (at 0.5% THD) 30V
2. Harmonic Distortion (at 5V output, 20Hz to 20 kHz)
   Phono-1, -2 (MAG): 0.009%
   Phono-3 (MC): 0.009%
3. Phono Equalization (20Hz to 20kHz)
   Phono-1, RIAA STD. . . . . .±0.4dB
   Phono-2, -3 RIAA STD. . . . . .±0.3dB
4. Hum and Noise (at 1V output, IHF A-network)
   Phono-1, -2 . . . . . .75dB
   Phono-3 . . . . . .65dB
5. Input Sensitivity/Impedance (at rated output)
   Phono-1 (MAG) . . . . . 2mV to 8mV/±1dB, 15kΩ to 100kΩ (Additional Cap: 0 to 400pF)
   Phono-2 (MAG) . . . . . .2mV±1dB, 50kΩ
   Phono-3 (MC) . . . . . 90μV±1dB, 22Ω
6. Overload (at 1kHz, 0.5% THD)
   Phono-1 . . . . . .450mV to 1,800mV
   Phono-2 . . . . . .450mV
   Phono-3 . . . . . 15mV
7. IM Distortion, 70Hz:7kHz (4:1) .0.012%

Note: S/N (measured at Pre-Out Jack, 16Hz Subsonic ON)
   Phono-1, -2 . . . . . .63dB
   Phono-3 . . . . . .51.5dB

B. PRE AMP SECTION (measured at Pre Out)

1. Output Voltage/Impedance
   Pin Jack
   Rated Output 1V/300Ω
   Maximum Output at 0.5% THD 7V
   Cannon Connector
   Rated Output 1V/600Ω
   Maximum Output at 0.5% THD 4.5V
2. Harmnic Distortion (at rated output)
   Pin Jack Output (20Hz to 20 kHZ) 0.01%
   Cannon Connector Output (20Hz to 20 kHz) 0.02%
3. Frequency Response
   Pin Jack Output, +0dB / −1dB . . . . . .5kHz to 200kHz
   Cannon Connector Output, +0dB / −1dB . . . . . .15Hz to 150kHz
4. Hum and Noise (IHF A-network)
   Tuner, AUX-1 (Pin Jack), AUX-2 . . . . . .92dB
   Tape Monitor-1, -2 . . . . . .92dB
   AUX-1 (Cannon Connector). . . .80dB
   Residual (Volume Control at Min.). 10μV/100dB
5. Input Sensitivity/Impedance (at rated output)
   Tuner, AUX-1 (Pin Jack), AUX-2 . . . . . .150mV±1dB/50kΩ
   Tape Monitor-1, -2 . . . . . .150mV±1dB/50kΩ
   AUX-1 (Cannon Connector). . . .150mV±1dB/600Ω
6. Overload (at 1kHz, 0.5% THD)
   Tuner, AUX-1 (Pin Jack), AUX-2 . . . . . .7V
   AUX-1 (Cannon Connector). . . .7V
7. IM Distortion, 70Hz:7kHz (4:1) .0.05%

C. MIC AMP SECTION (at rated preamp output)

1. Harmonic Distortion 0.1%
2. Frequency Response, +0dB / −3dB . . . .25Hz to 20 kHz
3. Hum and Noise (IHF A-network) .68dB
4. Residual Noise (IHF A-network) .32μV/90dB
5. Input sensitivity/Impedance . . .4mV±1dB/ 600Ω / 50kΩ
6. Overload (at 1kHz, 0.5% THD) . .1V

D. HEADPHONE AMP SECTION (at rated preamp input)

1. Harmonic Distortion : 0.1%
2. Frequency Response, +0dB / −1dB . . . . High Imp: 80Hz to 18kHz, Low Imp: 70Hz to 35kHz
3. Hum and Noise (IHF A-network) .75dB
4. Rated Output (at 1kHz, rated input . . . . . .20mW/8Ω load, 12mW/600Ω load
5. Maximum Output (at 1kHz, 0.5% THD)
   Both channels driven . . . . . .0.5W/8Ω load
   Both channels driven . . . . . .0.35W/600Ω load
6. Output Impedance: Low . . . . .4Ω to 16Ω
   High 600Ω

E. CONTROL CHARACTERISTICS

1. Division Frequency

32Hz	.+12dB ~ −12dB/±1dB
63Hz	.+12dB ~ −12dB/±1dB
125Hz	.+12dB ~ −12dB/±1dB
250Hz	.+12dB ~ −12dB/±1dB
500Hz	.+12dB ~ −12dB/±1dB
1kHz	.+12dB ~ −12dB/±1dB
2kHz	.+12dB ~ −12dB/±1dB
4kHz	.+12dB ~ −12dB/±1dB
8kHz	.+12dB ~ −12dB/±1dB
16kHz	.+12dB ~ −12dB/±1dB

2. Loudness-1 at 50Hz . . . . . .+13dB±1dB
   10kHz . . . . . .+ 6dB±1dB
   -2 at 50Hz . . . . . .+ 7dB±1dB
   10kHz . . . . . .+ 3dB±1dB
3. High Filter-1 at 12kHz 12dB/oct
   -2 at 24kHz 12dB/oct
4. Low Filter-1 at 16Hz 12dB/oct
   -2 at 4Hz 12dB/oct
5. Muting . . . . . .−20dB±1dB
6. Tone Defeat (at 1kHz, IN to OUT) . . . . . .0dB±1dB
7. Volume Difference between Left and Right Channels:
   At maximum position 1dB
   At 9 to 3 o'clock position 1.5dB

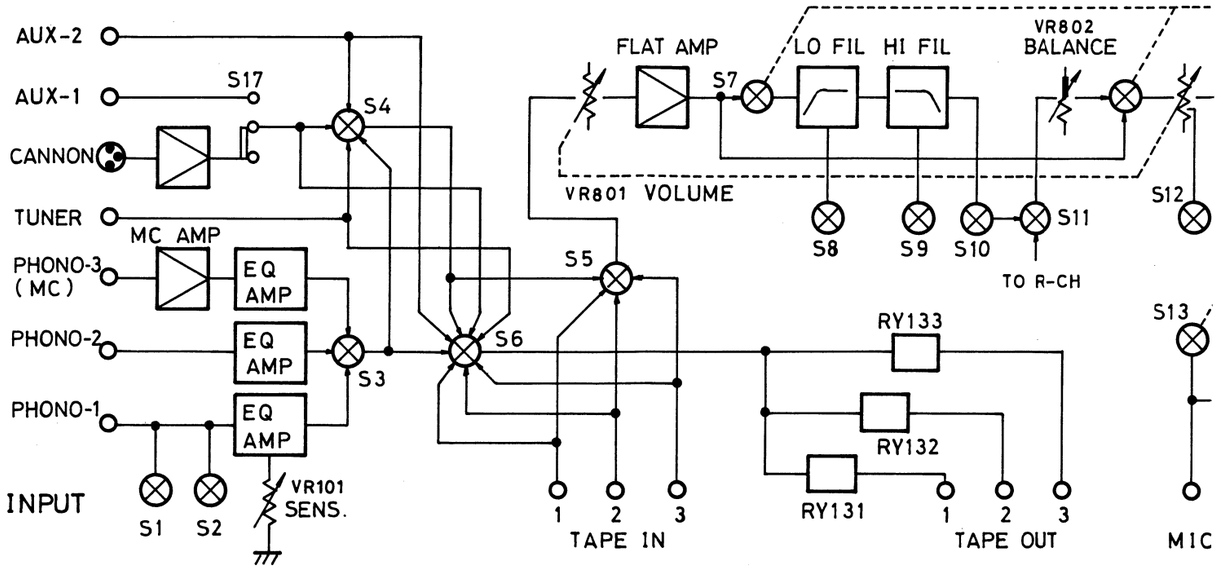
Repair Parts List
Reparaturteilliste
Liste des pièces de rechange

Schematic Location	Part No.	Description
TRANSISTORS, DIODES AND IC'S		
Q201, 202, 203, 204, 209, 210, 211, 212, 219, 220, 223, 224, 225, 226	301201180	2SC1844
Q205, 206, 207, 208, 213, 214, 215, 216, 217, 218, 221, 222, 227, 228	301001149	2SA991
Q251, 962	301201115	2SC828 (R) or (S)
Q252	301101123	2SB605 (K)
Q301, 302, 303, 304, 401, 404, 5001, 5002, 5005, 5006, 5013, 5014, 5015, 5016, 633, 634, 635, 801, 802, 803, 804, 807, 808, 809, 810, 821, 822, 909, 910, 911, 912	302001113	2SK68A (L) or (M)
Q305, 306, 307, 308, 313, 314, 406, 408, 601, 606, 607, 612, 613, 618, 619, 624, 625, 630, 631, 811, 812, 813, 814, 819, 820, 908, 913, 914, 917, 918	301001145	2SA921 (S) or (T)
Q309, 310, 311, 312, 315, 316, 317, 318, 403, 407, 602, 605, 608, 611, 614, 617, 620, 623, 626, 629, 632, 805, 806, 815, 816, 817, 818, 907, 915, 916	301201171	2SC1980 (S) or (T)
Q402, 405	302001115	2SK130A (L) or (M)
Q409	301201164	2SC1885 (R) or (S)
Q410, 5003, 5004, 5009, 5010, 5011, 5012, 5017, 5018, 636, 823, 824	301001142	2SA912 (R) or (S)
Q603, 604, 609, 610, 615, 616, 621, 622, 627, 628	301201155	2SC1318 (R) or (S)
Q901	301201132	2SC1384 (R) or (S)
Q902	301001123	2SA684 (R) or (S)
Q903	301201185	2SC1827 (Y), (G) or (B)
Q904	301001153	2SA769 (Y), (G) or (B)
Q905	301201158	2SC1567 (R) or (S)
Q906	301001135	2SA794 (R) or (S)
Q961	301201170	2SC1984
Q963	301301134	2SD571 (K)
D131 ~ 142, 231, 232, 5001, 5002, 965	300111010	1S2472
D201, 202, 803, 804, 966	300212002	KB-265
D301, 302, 401, 402, 403, 801, 802	300212008	KB-165
D901, 902, 963	300919023	MI-152R, −B Rectifier
D903, 904	300919022	MI-152, +B Rectifier
D905, 906	300313021	WZ-310, Zener 31V, 0.5W
D961, 962	300919024	SR1K-4, Rectifier
D001	300414014	SEL-105RC, LED, Pilot Lamp
IC5001, 5002, 5003, 5004	303452154	TA-7136P, Mic Amp
IC5005, 5006	303452182	μPC575C2, Output Amp
IC901	303452179	μA78M20UC, +B Stabilizer
IC902	303452181	μA79M20AUC, −B Stabilizer
VARIABLE RESISTORS		
VR101	525101154	1KBx2, Phono-1 Sensitivity Control
VR5001	525101153	50KBx2x2, Mic Mixing Control
VR701 ~ 710	581005047	150KWx2, Acoustic Control
VR801	525121139	55Kx2 + 20Kx2, Volume Control
VR802	525101152	50KMN, Balance Control
VR901, 902	510502141	10KB, Voltage Adj
VR903	510502142	50KB, Cannon Amp Phase Adj
SWITCHES		
S1	601011326	Phono-1 Load Impedance Selector
S2	601011327	Phono-1 Additional Capacitance Selector
S3	601011328	Rhono Selector
S4	601011323	Input Selector
S5	601011322	Monitor
S6	601011321	Rec Out Selector
S7	611001258	Tone Selctor
S8, 9	611001259	High Filter, Low Filter
S10, 15	611001256	Mode (L-R) Selector, Muting
S11, 12, 13, 14	611001257	Mic Mode, Loudness, Mode (Mono-Rev), Mic Impedance Selector
S16	601011320	Phones Impedance Selector
S17, 18	613000022	Cannon Input, Cannon Output
S19	611001247	Power
OTHERS		
RY131, 132, 133, 5001, 5002	240111236	Reed Relay, Tape Out, Phones Out, etc.
RY251	240111237	Relay, Cannon Output
L5001, 5002, 5003, 5004, 5005, 901, 902	226501141	Coil, 47μH
T001, 002	205001430	Power Transformer for Amplifier
T003	205001431	Power Transformer for Relay

Schematic Location	Part No.	Description
T004, 005	227111012	Transformer, Phones Output
F961, 962	341221050	Fuse, 0.5A-3AG, for 100V, 120V Areas
	341221025	Fuse, 0.25A-3AG, for 220V, 240V Areas
	345952020	Fuse, 200mAT, for Europe
F963	341221020	Fuse, 0.2A-3AG, for 100V, 120V Areas
	341221015	Fuse, 0.15A-3AG, for 220V, 240V Areas
	345952006	Fuse, 63mAT, for Europe
	626110028	Jack, Headphones, Tape Out-3
	627117826	Jack, Mic
	626110029	Jack, Tape In-3
	624201202	Pin Jack, 2P, Pre Out
	624202204	Pin Jack, 4P, Phono, Tuner, AUX
	624203204	Pin Jack, 4P, Tape Monitor-1, -2
	625001115	DIN Socket, 5P w/Switch, Tape Monitor
	628111122	Cannon Socket 3P F-type
	628111121	Cannon Socket 3P M-type
	648211141	AC Outlet
	796301115	Line Cord, for USA, etc.
	796301125	Line Cord, for Australia
	796301130	Line Cord, for UK
	796301139	Line Cord, for Europe
	111911395	Front Panel Ass'y wo/Handles, (Gold)
	111911402	Front Panel Ass'y wo/Handles, (Black)
	670101115	Handle (Gold)
	670101116	Handle (Black)
	116310215	Knob (Gold), Volume, Input Selector
	116310211	Knob (Gold), Phono Input Selector, Balance
	116310216	Knob (Gold), Tape Monitor, Rec Out
	116310217	Knob (Gold), Phono Sensitivity Selector, etc.
	116310221	Knob (Gold), Mic Mix Level, R-ch
	116310222	Knob (Gold), Mic Mix Level, L-ch
	116310212	Knob (Gold), Loudness, Filter, etc.
	116310165	Knob, Acoustic Control, (White Marker)
	116310226	Knob (Black), Volume, Input Selector
	116310227	Knob (Black), Balance, Phono Input Selector
	116310228	Knob (Black), Tape Monitor, Rec Out
	116310229	Knob (Black), Phono Sensitivity Selector, etc.
	116310230	Knob (Black), Mic Mix Level, R-ch
	116310231	Knob (Black), Mic Mix Level, L-ch
	116310232	Knob (Black), Loudness, Filter, etc.
	116310233	Knob, Acoustic Control (Red Marker)
	770911189	Collar, Handle Mtg (Gold)
	770911205	Collar, Handle Mtg (Black)
	673402018	Foot
	770202007	Shorted Pin Plug, Phono Output

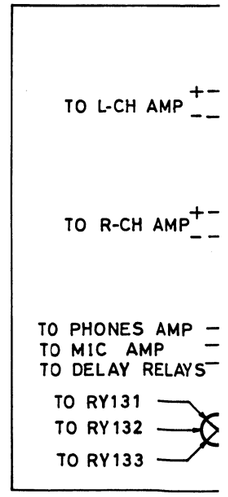
Schematic Location	Part No.	Description
	791001134	Shielded Cord Ass'y, w/Pin Plug (Gold)
	770911209	Cap Screw, M6x40mm (BLZ), Handle Mtg
	770911119	Ground Terminal
	705213004	Screw, +3x4mm, Binding (Ni), Acoustic Control Mtg
	766223008	Screw, +3x8mm, Tap-tight (BLZ), DIN Socket Mtg, etc.
	770911130	Screw, +3x9mm, Pilot Lamp PC Board Mtg
	762213006	Screw, +3x6mm, Oval Countersunk, Cannon Socket Mtg
	725223008	Screw, +3x8mm, Tapping (BLZ), Pin Jack Board Mtg
	766213012	Screw, +3x12mm, Tap-tight, Transistor Mtg, etc.
	766213006	Screw, +3x6mm, Tap-tight (Ni), Power Switch Mtg, etc.
	765224008	Screw, +4x8mm, Tap-tight (BLZ), Power Trans Mtg
	765224010	Screw, +4x10mm, Tap-tight (BLZ), Foot Mtg
	725224010	Screw, +4x10mm, Tapping (BLZ), Bottom Cover Mtg, etc.
	770402207	Nut, Hex, M9
	770402209	Nut, Hex, M12
	770402201	Nut, Hex, M3
	770911144	Nut, Square, M3, Transistor, Mtg
	770402205	Nut, Hex, M7
	770402206	Nut, Hex, M8
	770911147	Plasti Rivet
	770500008	Washer, ϕ9
	770500009	Washer, ϕ12
	770500014	Teethed Washer, ϕ3
	770500001	Washer, ϕ3
	770500010	Spring Washer, ϕ3
	770500006	Washer, ϕ7
	141510161	Phono-1 Amp PC Board Ass'y
	141510162	Phono-2 Amp PC Board Ass'y
	141510163	Phono-3 Amp PC Board Ass'y
	141710295	Mic and Filters Amp PC Board Ass'y
	141810795	Volume Control Amp PC Board Ass'y
	141810796	Phono MC Head-amp PC Board Ass'y
	141810797	Cannon Input Amp PC Board Ass'y
	141810798	Selector Circuit PC Board Ass'y
	141810799	Phono Selector PC Board Ass'y
	141810800	Acoustic Control PC Board Ass'y
	141810801	Octave Equalizer PC Board Ass'y
	141810703	Pilot Lamp PC Board Ass'y
	141810802	Cannon Output and Power Supply PC Board Ass'y
	141810803	Relays Power Supply PC Board Ass'y
	141810804	Cannon Output Relay PC Board Ass'y

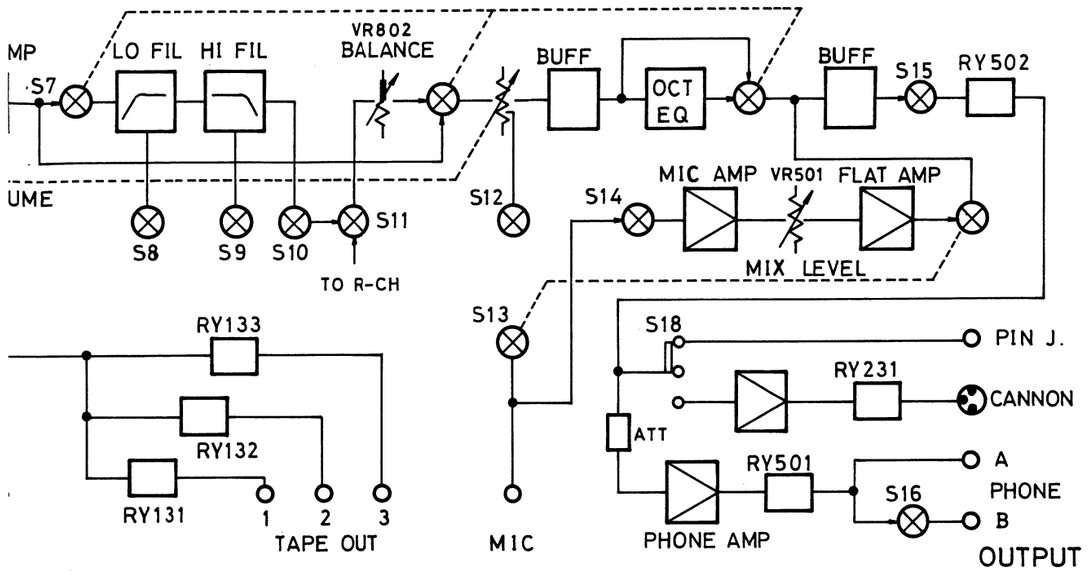
Block Diagram
Blockschaltbild
Schéma synoptique



R-CH SAME AS ABOVE

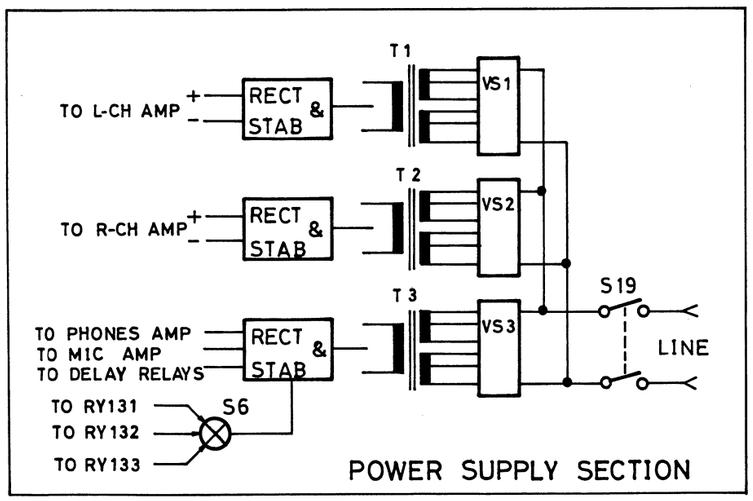
S1	PHONO-1 LOAD IMP. SELECTOR	S16	PHONES B IMP. SELECTOR
S2	PHONO-1 ADD. CAPACITOR SW	S17	CANNON IN SWITCH
S3	PHONO INPUT SELECTOR	S18	CANNON OUTPUT SWITCH
S4	INPUT SELECTOR	S19	POWER SWITCH
S5	MONITOR SWITCH	RY131	TAPE OUT 1 RELAY
S6	REC OUT SWITCH	RY132	TAPE OUT 2 RELAY
S7	TONE SWITCH	RY133	TAPE OUT 3 RELAY
S8	LOW FILTER SWITCH	RY231	CANNON OUT DELAY RELAY
S9	HIGH FILTER SWITCH	RY501	PHONES DELAY RELAY
S10	MODE SWITCH (1)	RY502	OUTPUT DELAY RELAY
S11	MODE SWITCH (2)		
S12	LOUDNESS SWITCH	VS	VOLTAGE SELECTOR
S13	MIC IMPEDANCE SWITCH		
S14	MIC MODE SWITCH		
S15	MUTING SWITCH		





IMP. SELECTOR
SWITCH
TPUT SWITCH
ITCH
1 RELAY
2 RELAY
3 RELAY
OUT DELAY RELAY
DELAY RELAY
DELAY RELAY

ELECTOR



Addendum

The following changes have been made on the units with serial numbers from R32452 and NB66158 onward.

1. Resistance value of resistor R825 (R826 for R-ch) used in the Volume Control Amplifier (X-220) circuit is changed from 33kΩ to 22kΩ. (Fig. A)
   Reason: To prevent deterioration of distortion factor between 40°C and 50°C of ambient temperature.
2. Choke coil (47μ) is added to B circuit for the Cannon Output Amplifier. (Fig. B)
   Reason: To improve S/N ratio of the Cannon Output Amplifier.

In the Power Supply PC board, circuit paths between +B2 and +B3, and between −B2 and −B3 are cut off, and choke coils are placed in between respectively.
The same modification has already been made for some of the units with serial numbers smaller than NB66158 and R32452.

Nachtrag

Folgende Veränderungen wurden bei den Geräten mit den Seriennummern R32452 und NB66158 aufwärts vorgenommen.

1. Der Widerstand R825 (R826 für R-Kanal) im Lautstärkeregler-Verstärker (X-220) wurde von 33kΩ auf 22kΩ heruntergesetzt – (Abb. A)
   Grund: Verhinderung von Verschlechterung des Klirrfaktors bei Umgebungstemperaturen von 40° bis 50°.
2. Einbau einer Schutzdrossel (47μ) in den B-Kreis des Cannon-Ausgangsverstärkers – (Abb. B)
   Grund: Verbesserung des Signal-Rauschabstandes des Cannon-Ausgangsverstärkers.

In die Stromkreise zwischen +B2 und +B3 und zwischen −B2 und −B3 auf der Netzteil-Leiterplatte wurden jeweils eine Schutzdrossel eingebaut.
Diese Veränderung wurde bereits bei einigen Geräten mit Seriennummern unter NB66158 und unter R32452 vorgenommen.

Addendum

Les modifications suivantes ont été apportées aux appareils portant les numéros de série R32452 et NB66158 et au delà.

1. La valeur de la résistance R825 (R826 pour le canal droit) utilisée dans le circuit amplificateur de commande du volume (X-220) est passée de 33kΩ à 22kΩ. (Fig. A)
   Raison: Empêcher une détérioration du facteur de distorsion entre 40°C et 50°C de température ambiante.
2. Une bobine d'arrêt (47μ) est adjointe au circuit B de l'amplificateur de sortie Cannon. (Fig. B)
   Raison: Amélioration du rapport signal/bruit de l'amplificateur de sortie Cannon.

Sur la plaquette du circuit d'alimentation, les trajectoires du circuit sont coupées entre +B2 et +B3 et entre −B2 et −B3 et des bobines d'arrêt y sont insérées.
Une modification semblable a déjà été apportée à quelques-uns des appareils portant des numéros de série inférieurs à NB66158 et R32452.

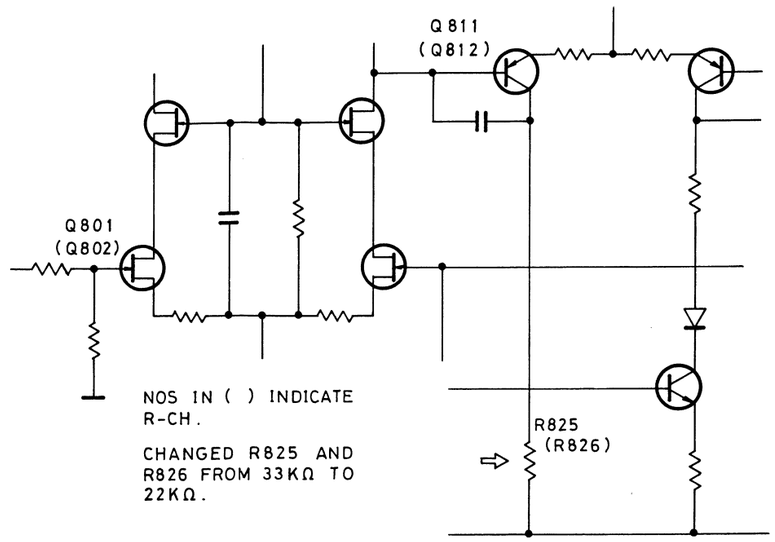


Fig. A. Volume Control Amp Circuit (portion)
Abb. A. Lautstärkeregler-Verstärkerkreis (Teil)
Fig. A. Circuit d'amplification de la commande du volume (portion)

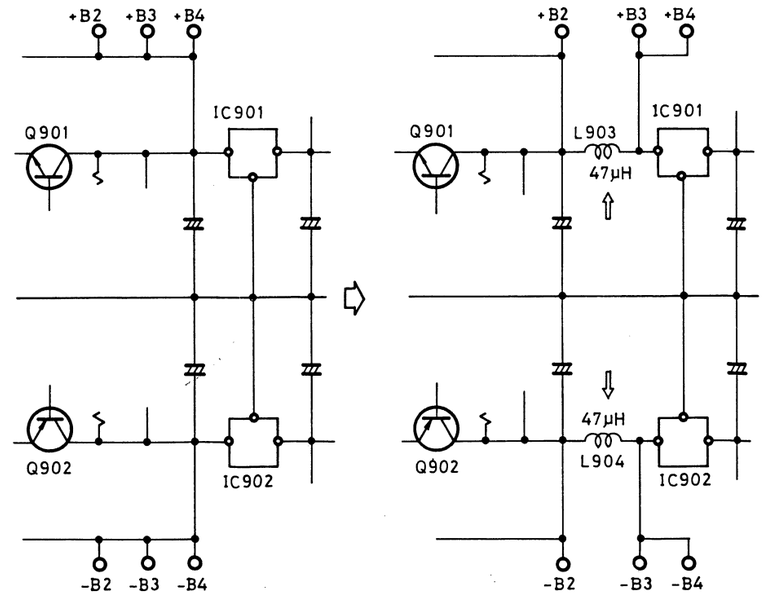
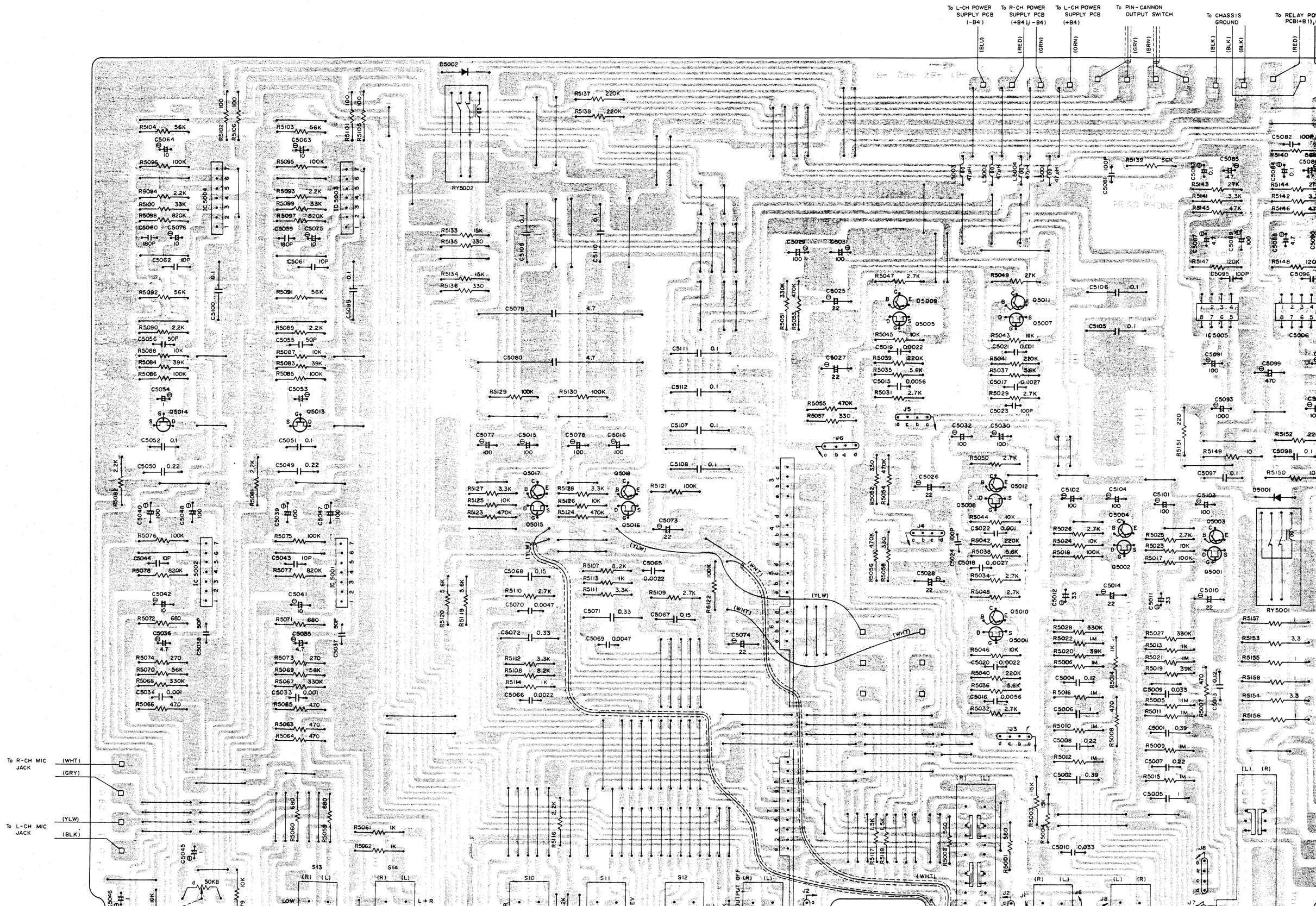
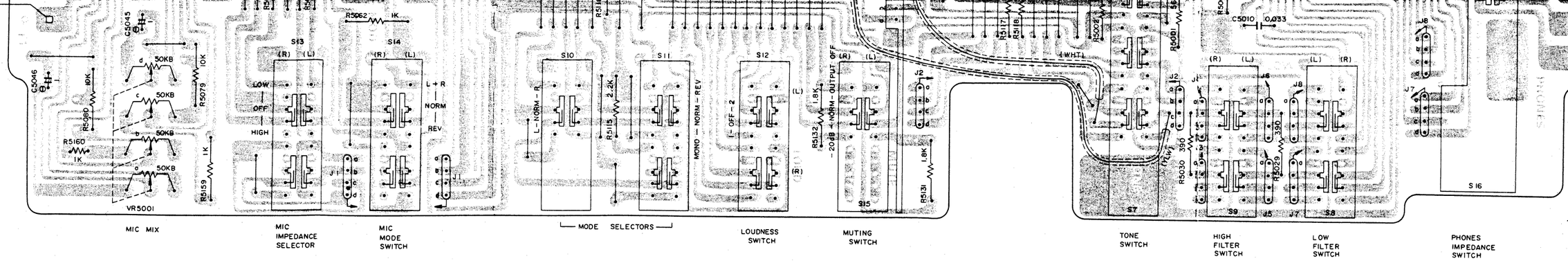


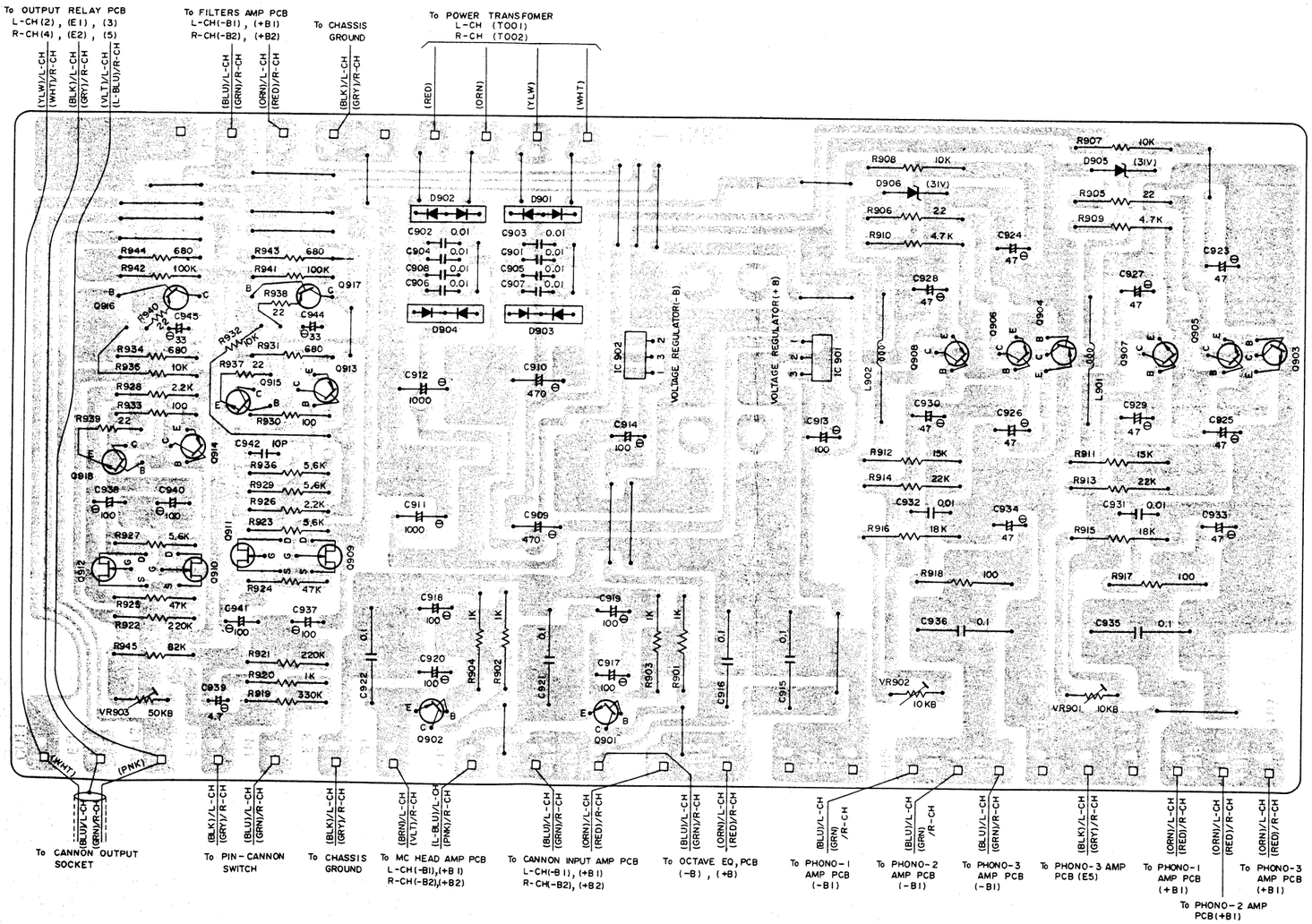
Fig. B. Power Supply Circuit (Portion)
Abb. B. Netzteil (Teil)
Fig. B. Circuit d'alimentation (portion)

Mic and Filters Amp Circuit Board Diagram
Bestückungsplan des Mikrofon- und Filter-Verstärkers
Diagramme de la plaquette d'amplification micro et filtres



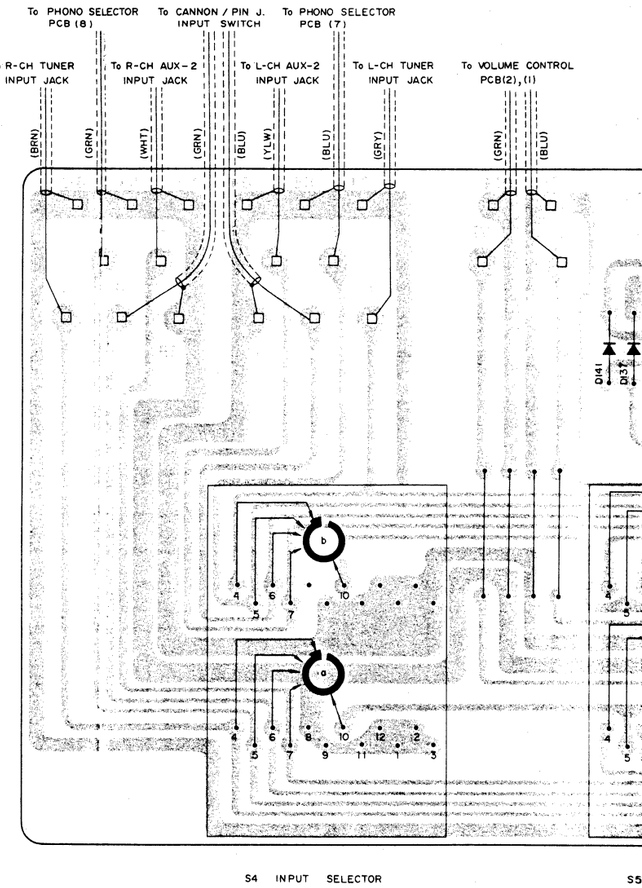


Cannon Output Amp and Power Supply Circuit Board Diagram
Bestückungsplan des Cannon-Ausgangsverstärkers und des Netzteils
Diagramme de la plaquette d'alimentation et d'amplification de la sortie Cannon


To CANNON OUTPUT SOCKET
To PIN-CANNON SWITCH
To CHASSIS GROUND
To MC HEAD AMP PCB L-CH(-B1),(+B1) R-CH(-B2),(+B2)
To CANNON INPUT AMP PCB L-CH(-B1), (+B1) R-CH(-B2), (+B2)
To OCTAVE EQ. PCB (-B), (+B)
To PHONO-1 AMP PCB (-B1)
To PHONO-2 AMP PCB (-B1)
To PHONO-3 AMP PCB (-B1)
To PHONO-3 AMP PCB (E5)
To PHONO-1 AMP PCB (+B1)
To PHONO-2 AMP PCB(+B1)
To PHONO-3 AMP PCB (+B1)
To OUTPUT RELAY PCB L-CH(2), (E1), (3) R-CH(4), (E2), (5)
To FILTERS AMP PCB L-CH(-B1), (+B1) R-CH(-B2), (+B2)
To CHASSIS GROUND
To POWER TRANSFOMER L-CH (T001) R-CH (T002)
VOLTAGE REGULATOR(-B)
VOLTAGE REGULATOR(+B)

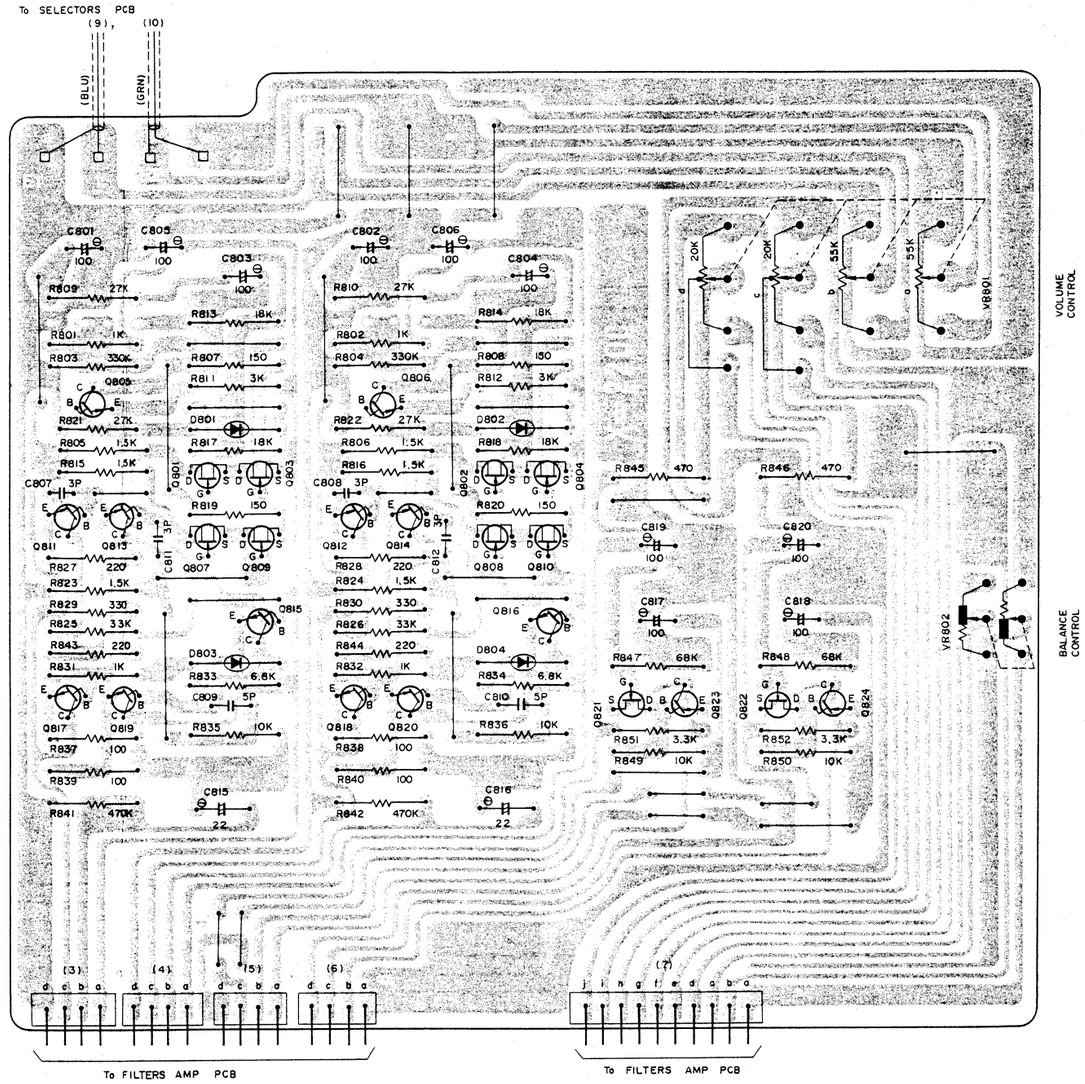
A

Selectors Circuit Board Diagram
Bestückungsplan der Wahlschalter-Schaltung
Diagramme de la plaquette des sélecteurs

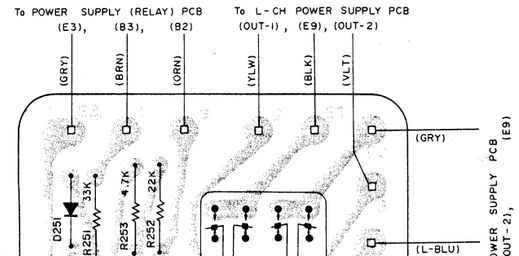

To PHONO SELECTOR PCB (8)
To CANNON / PIN J. INPUT SWITCH
To PHONO SELECTOR PCB (7)
To R-CH TUNER INPUT JACK
To R-CH AUX-2 INPUT JACK
To L-CH AUX-2 INPUT JACK
To L-CH TUNER INPUT JACK
To VOLUME CONTROL PCB(2),(1)
S4 INPUT SELECTOR
S5

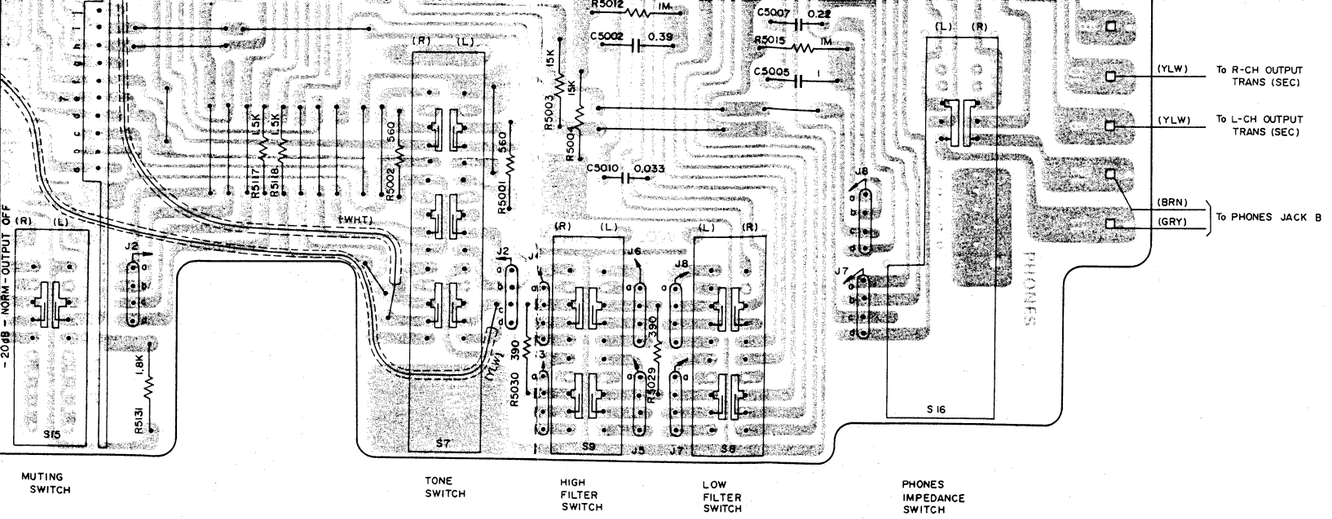
B

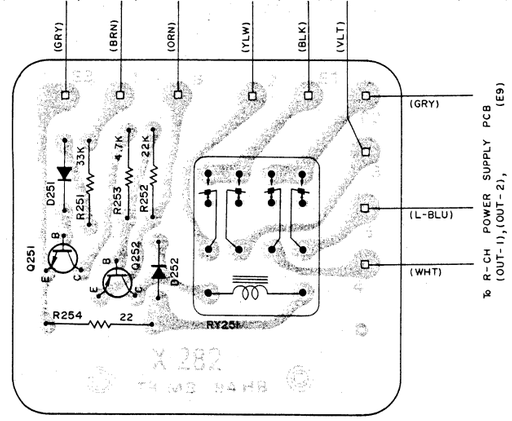
Volume Control Amp Circuit Board Diagram
Bestückungsplan des Lautstärkeregler-Verstärkers
Diagramme de la plaquette d'amplification de la commande du volume



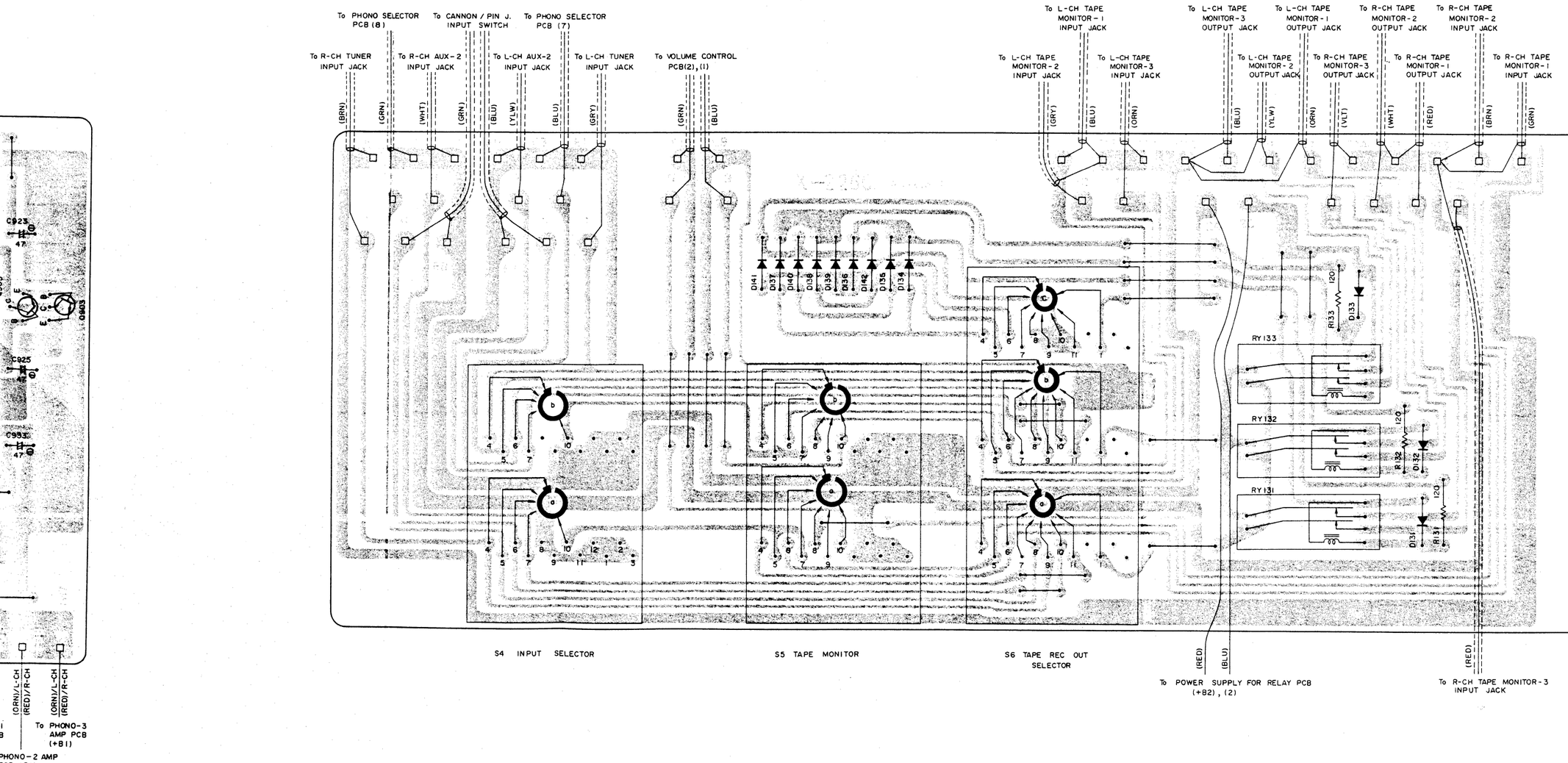
Cannon Output Relay Circuit Board Diagram
Bestückungsplan der Cannon-Ausgangsrelais-Schaltung
Diagramme de la plaquette du relais de sortie Cannon



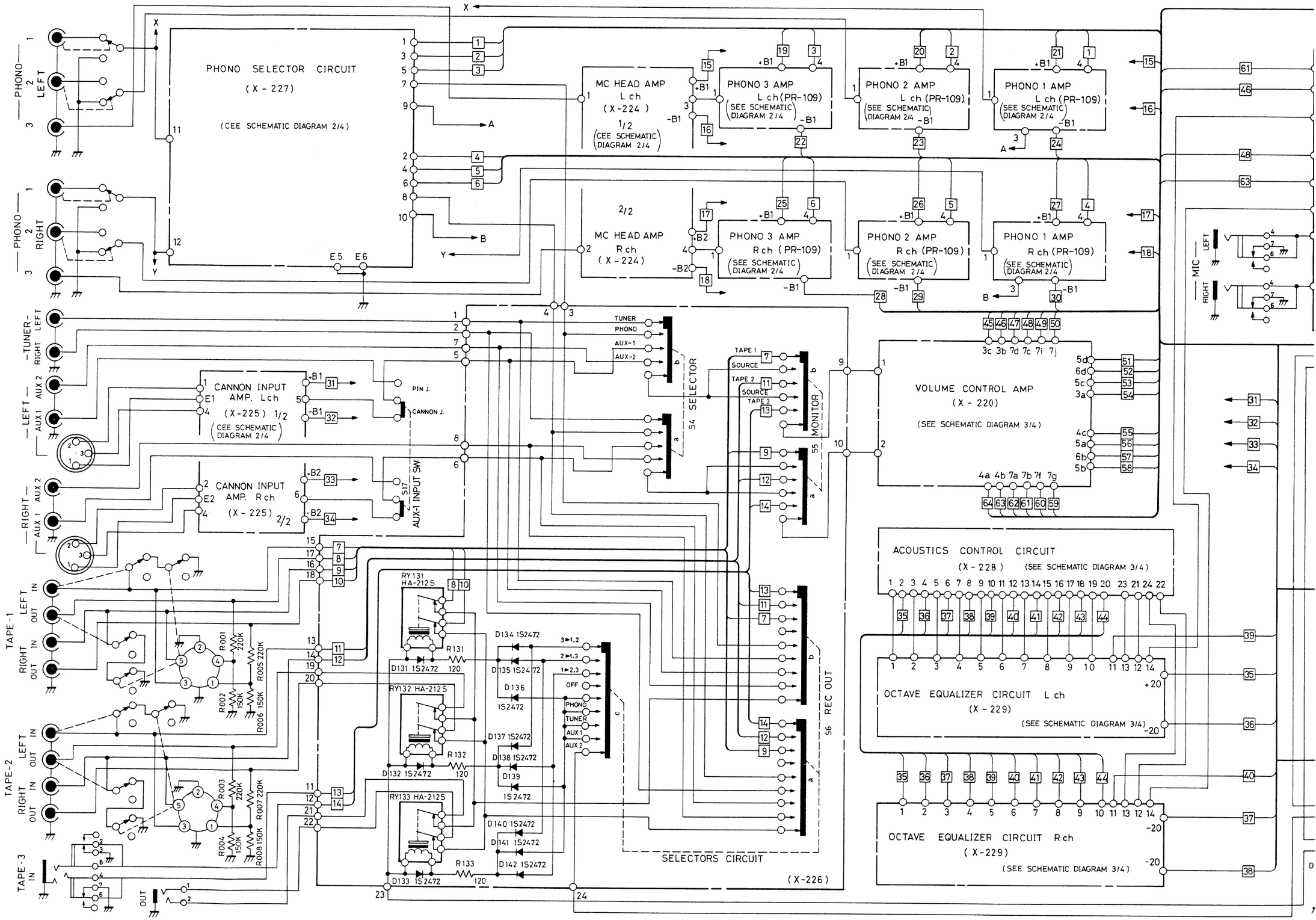


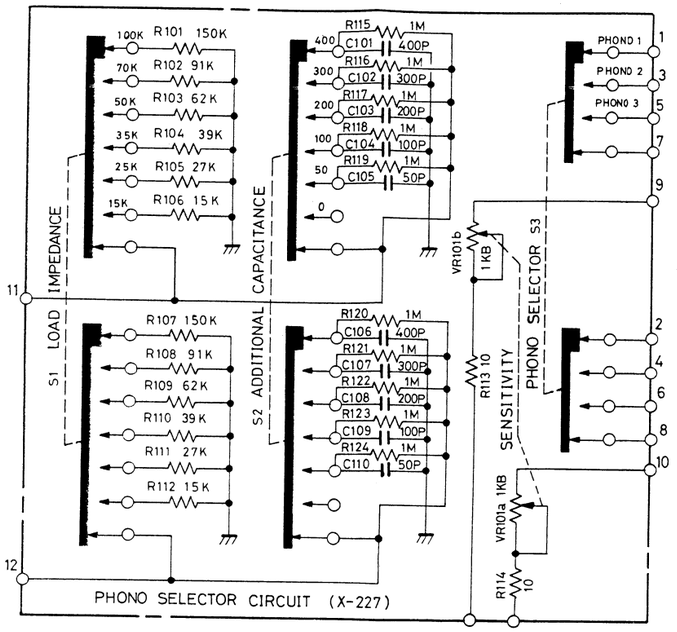


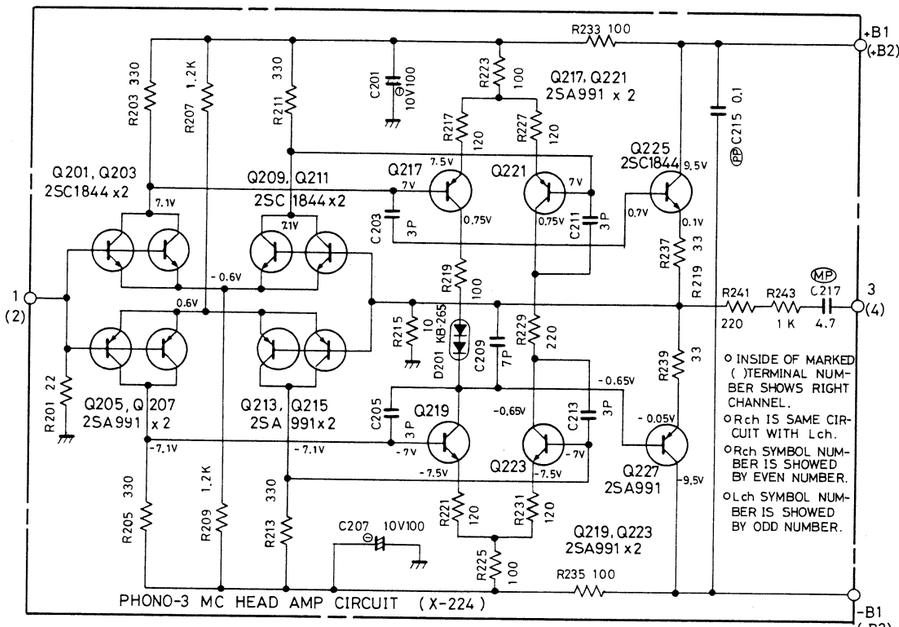
Selectors Circuit Board Diagram
Bestückungsplan der Wahlschalter-Schaltung
Diagramme de la plaquette des sélecteurs

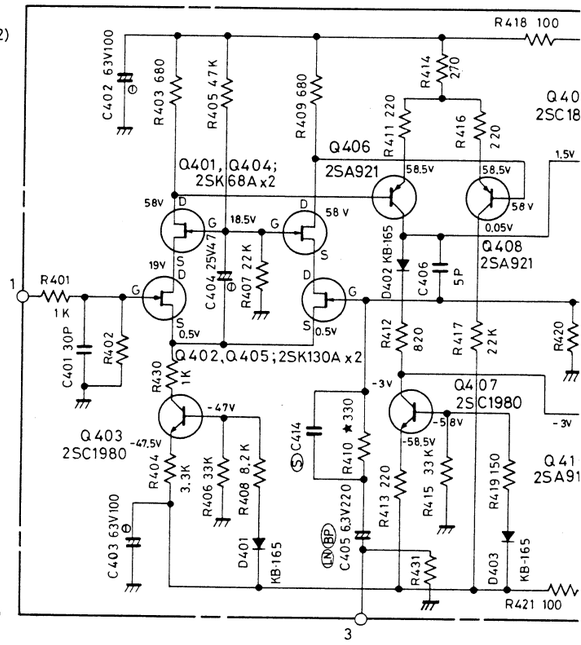

To PHONO SELECTOR PCB (8)
To CANNON / PIN J. INPUT SWITCH
To PHONO SELECTOR PCB (7)
To R-CH TUNER INPUT JACK
To R-CH AUX-2 INPUT JACK
To L-CH AUX-2 INPUT JACK
To L-CH TUNER INPUT JACK
To VOLUME CONTROL PCB(2),(1)
To L-CH TAPE MONITOR-1 INPUT JACK
To L-CH TAPE MONITOR-2 INPUT JACK
To L-CH TAPE MONITOR-3 INPUT JACK
To L-CH TAPE MONITOR-3 OUTPUT JACK
To L-CH TAPE MONITOR-2 OUTPUT JACK
To L-CH TAPE MONITOR-1 OUTPUT JACK
To R-CH TAPE MONITOR-2 OUTPUT JACK
To R-CH TAPE MONITOR-1 OUTPUT JACK
To R-CH TAPE MONITOR-2 INPUT JACK
To R-CH TAPE MONITOR-1 INPUT JACK
D141 D137 D140 D138 D139 D136 D142 D135 D134
RY133
RY132
RY131
S4 INPUT SELECTOR
S5 TAPE MONITOR
S6 TAPE REC OUT SELECTOR
To POWER SUPPLY FOR RELAY PCB (+82),(2)
To R-CH TAPE MONITOR-3 INPUT JACK

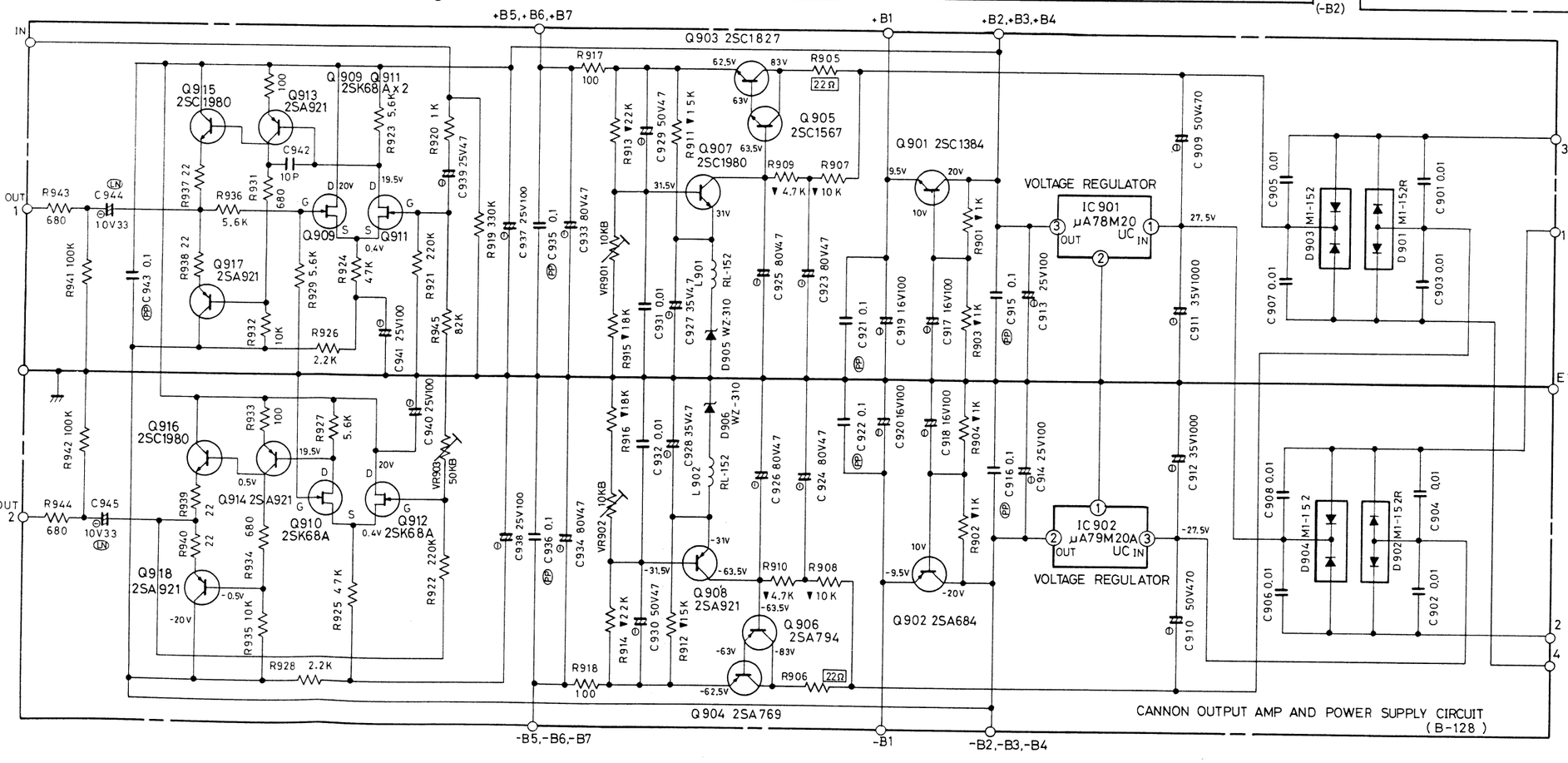
Schematic Diagram
Schaltungsschema
Diagramme schématique






PHONO-3 MC HEAD AMP CIRCUIT (X-224)
Q201, Q203 2SC1844 x2
Q209, Q211 2SC1844 x2
Q217, Q221 2SA991 x 2
Q225 2SC1844
Q205, Q207 2SA991 x 2
Q213, Q215 2SA991 x2
Q219
Q223
Q227 2SA991
Q219, Q223 2SA991 x2
R233 100
R235 100
+B1 (+B2)
-B1 (-B2)
INSIDE OF MARKED ( )TERMINAL NUMBER SHOWS RIGHT CHANNEL.
Rch IS SAME CIRCUIT WITH Lch.
Rch SYMBOL NUMBER IS SHOWED BY EVEN NUMBER.
Lch SYMBOL NUMBER IS SHOWED BY ODD NUMBER.





PHONO-1. PHONO-2. PHONO-3 AMP C

POSITION / SYMBOL NO.	PHONO-1	PHO
R402	330K	5
R420	10K	3
R431	10K	SH
C412	3500P	440
C413	300P	36
C414	17800P	NOT
C409	3200P	135

D

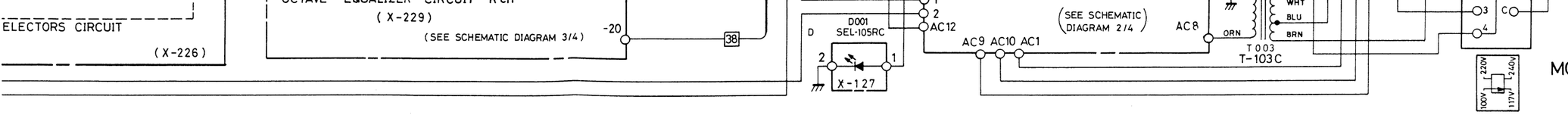
E

PHONO 3 AMP L ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
PHONO 2 AMP L ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
PHONO 1 AMP L ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
PHONO 3 AMP R ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
PHONO 2 AMP R ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
PHONO 1 AMP R ch (PR-109) (SEE SCHEMATIC DIAGRAM 2/4)
MIC AND FILTERS AMP CIRCUIT (TC-134) (SEE SCHEMATIC DIAGRAM 4/4)
MIC LEFT RIGHT
HEADPHONES A B
S18 OUTPUT SW
PIN J.
CANNON J.
HEADPHONE OUTPUT TRANSFORMER
T004 T005 RL-165
OUTPUT LEFT RIGHT
Q252 2SB605 Q251 2SC828
RY 251 MS4-12VDC CANNON OUTPUT RELAY CIRCUIT (X-282)
S4 SELECTOR
TAPE 1 SOURCE TAPE 2 SOURCE TAPE 3 MONITOR
S5
S6 REC OUT
VOLUME CONTROL AMP (X-220) (SEE SCHEMATIC DIAGRAM 3/4)
ACOUSTICS CONTROL CIRCUIT (X-228) (SEE SCHEMATIC DIAGRAM 3/4)
OCTAVE EQUALIZER CIRCUIT L ch (X-229) (SEE SCHEMATIC DIAGRAM 3/4)
OCTAVE EQUALIZER CIRCUIT R ch (X-229) (SEE SCHEMATIC DIAGRAM 3/4)
ELECTORS CIRCUIT (X-226)
CANNON OUTPUT AND POWER SUPPLY L ch (B-128) (SEE SCHEMATIC DIAGRAM 2/4)
CANNON OUTPUT AND POWER SUPPLY R ch (B-128) (SEE SCHEMATIC DIAGRAM 2/4)
POWER SUPPLY FOR RELAYS (B-129) (SEE SCHEMATIC DIAGRAM 2/4)
D001 SEL-105RC X-127
POWER TRANSFORMER T001 T-100C T002 T-100C T003 T-103C
VOLTAGE SELECTORS VS001 VS002 VS003
SWITCHED J001 J002 J003 C001 NSK-135
S19 POWER SW. ON OFF
LINE AC 100V.120V 220V.240V
C001 0.047 C002 0.047
LIVE GROUND NEUTRAL AC 240V
CHASSIS GROUND

SHEET 1 of 4

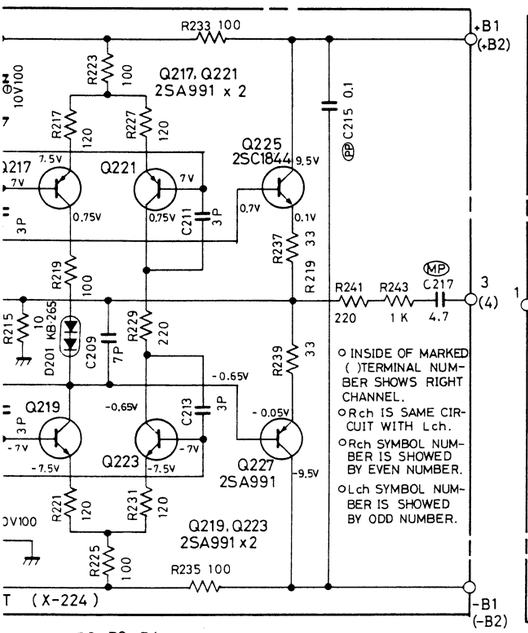
MODEL RC-5000 SCHEMATIC DIAGRAM

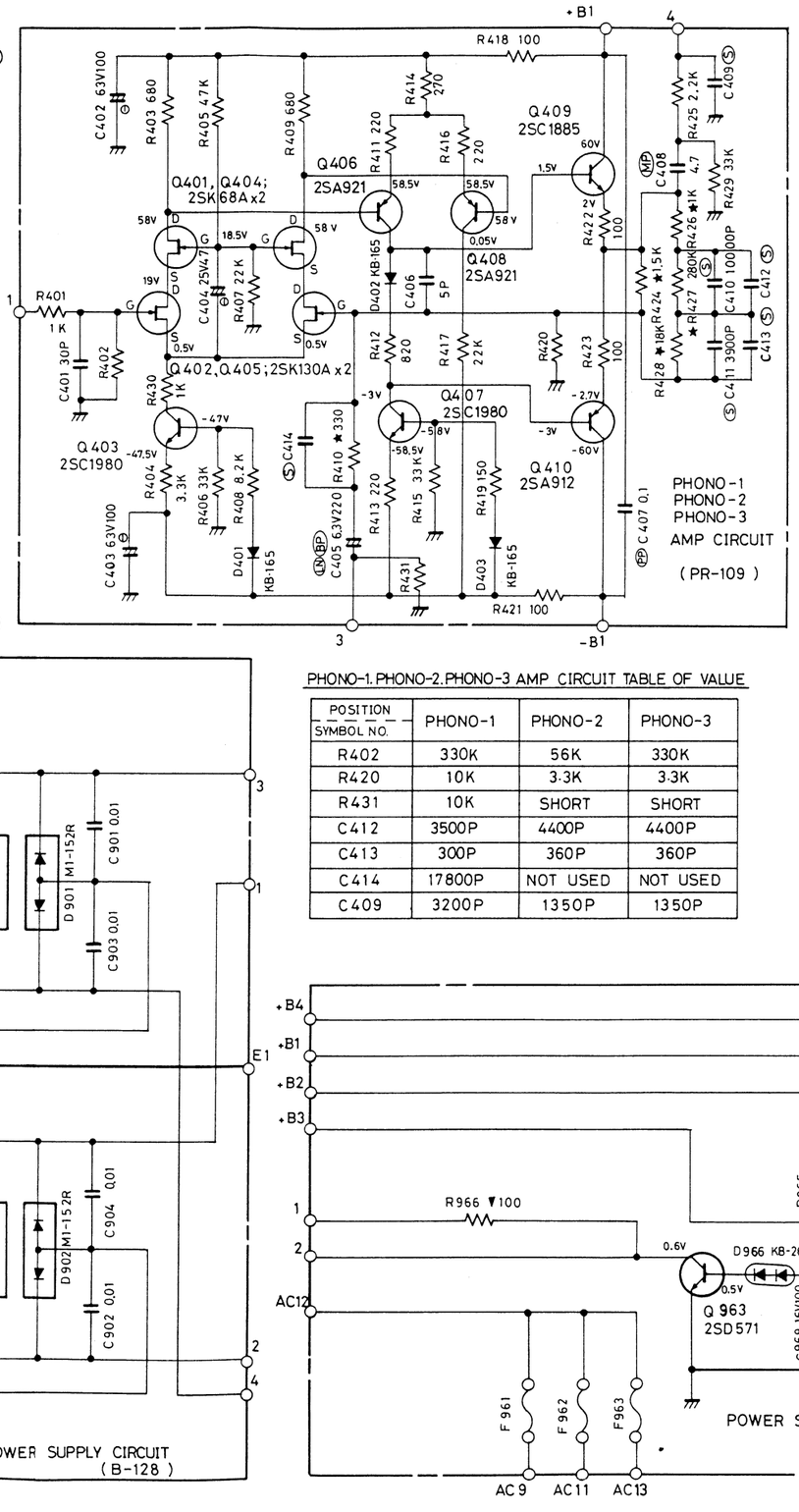
R233 100 R418 100

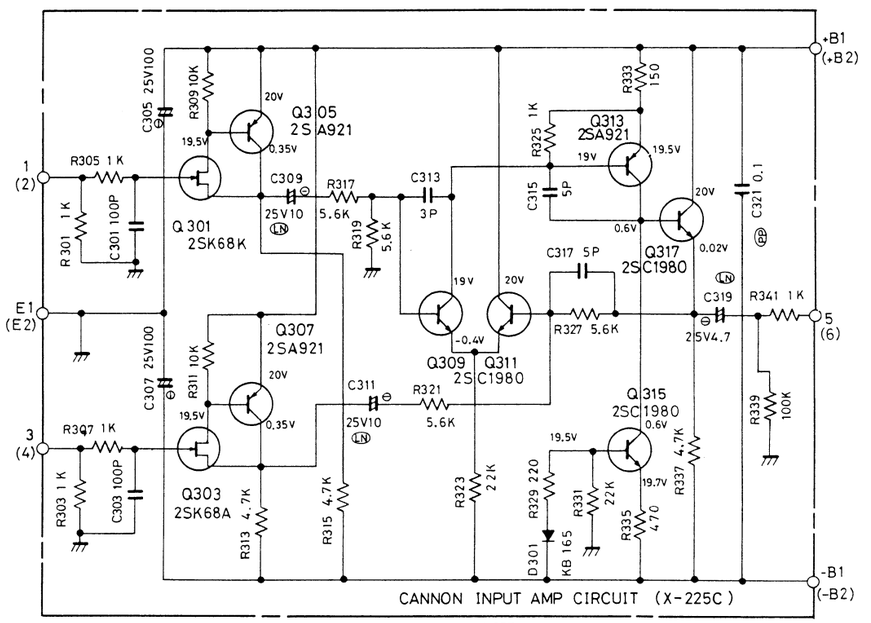


SHEET 1 of 4

MODEL RC-5000 SCHEMATIC DIAGRAM







NOTE:

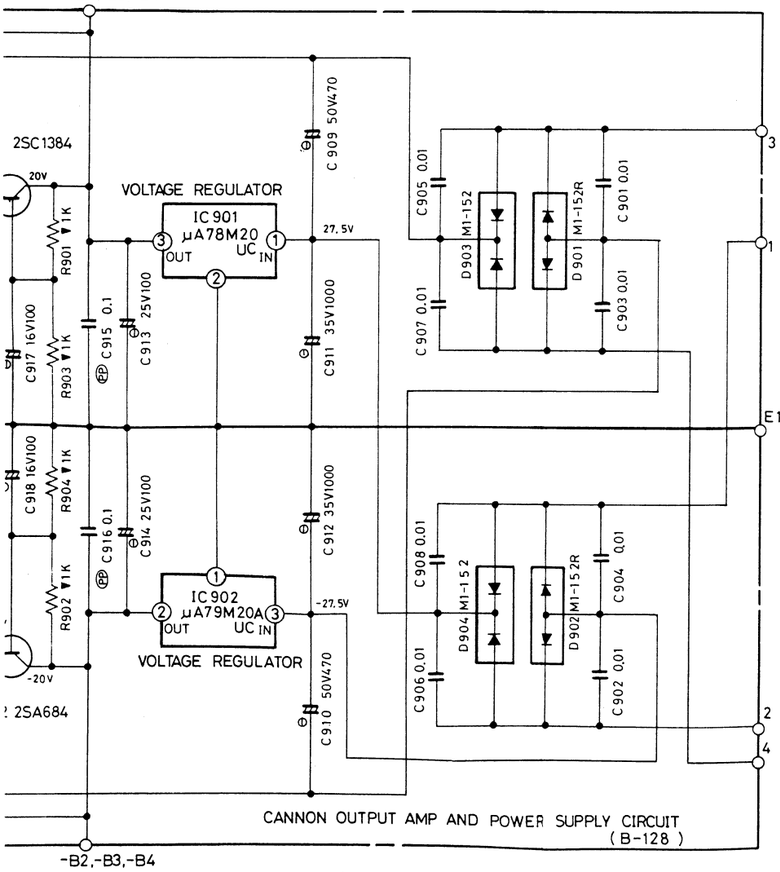
- INSIDE OF MARKED ( ) TERMINAL NUMBERS SHOWS RIGHT CHANNEL.
- Rch IS SAME CIRCUIT WITH Lch.
- Rch SYMBOL NUMBER IS SHOWED BY EVEN NUMBER.
- Lch SYMBOL NUMBER IS SHOWED BY ODD NUMBER.

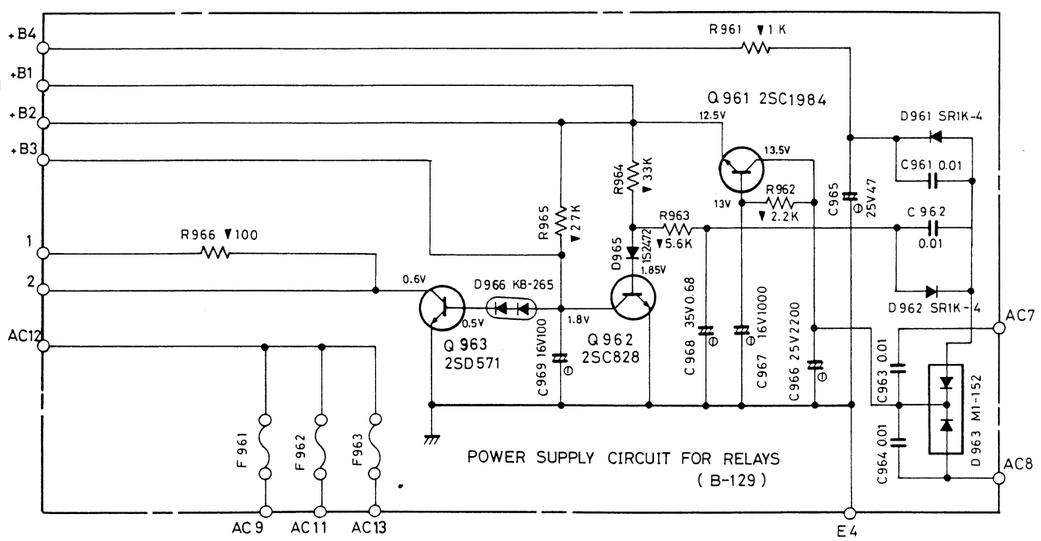
PHONO-1. PHONO-2. PHONO-3 AMP CIRCUIT TABLE OF VALUE

POSITION / SYMBOL NO.	PHONO-1	PHONO-2	PHONO-3
R402	330K	56K	330K
R420	10K	3.3K	3.3K
R431	10K	SHORT	SHORT
C412	3500P	4400P	4400P
C413	300P	360P	360P
C414	17800P	NOT USED	NOT USED
C409	3200P	1350P	1350P

FUSE TABLE OF VALUE

	100 or 120V	220 or 240V	
	STANDARD TYPE		EUROPEAN TYPE
F961	0.5 A (1ong)	0.25 A (long)	200 mAT (mini)
F962	0.5 A (long)	0.25 A (long)	200mAT (mini)
F963	0.2A (long)	0.15 A (long)	63 mAT (mini)





(RESISTORS)

5% TOLERANCE UNLESS OTHERWISE NOTED.
K --- KILO OHM.
M --- MEGA OHM.
★ --- TEMPERATURE COEFICIENT RESISTORS.
▼ --- NONFLAMMABLE CARBON FILM RESISTORS 1/2 WATT.
Ω --- FUSIBLE RESISTORS.
NON MARK --- LOW NOISE TYPE CARBON RESISTORS 1/4 WATT.

(CAPACITORS)

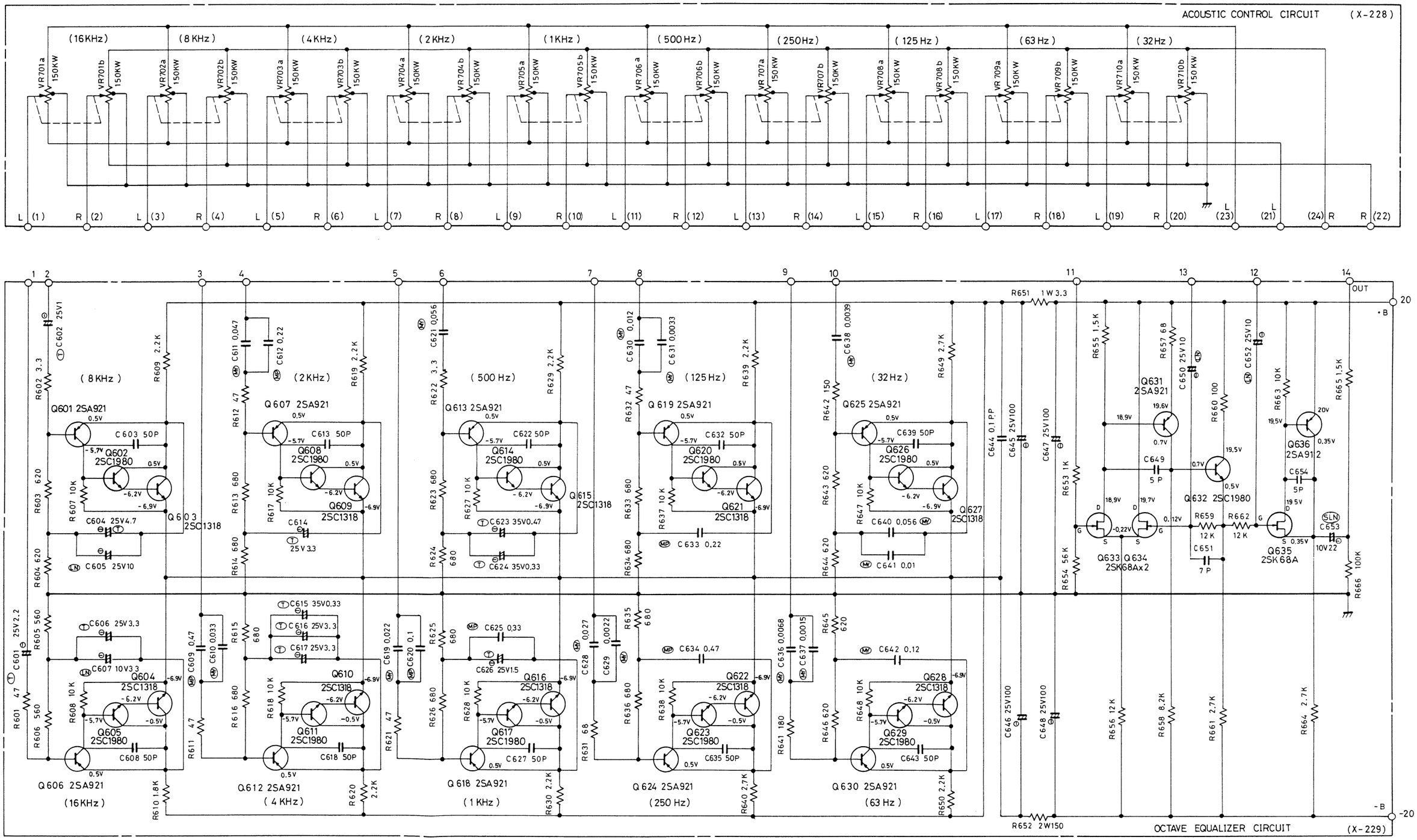
(MY) --- MYLAR FILM CAPACITORS.
(S) --- POLYSTYRENE FILM CAPACITORS.
(T) --- TANTALUM CAPACITORS.
(LN) --- LOW NOISE TYPE CAPACITORS.
(PP) --- POLYPROPYLENE FILM CAPACITORS.
(BP) --- BI-POLAR ELECTROLYTIC CAPACITORS.
(SLN) --- SUPER LOW NOISE TYPE CAPACITORS.
--- ELECTOLYTIC CAPACITORS.
NON MARK --- CERAMIC CAPACITORS.

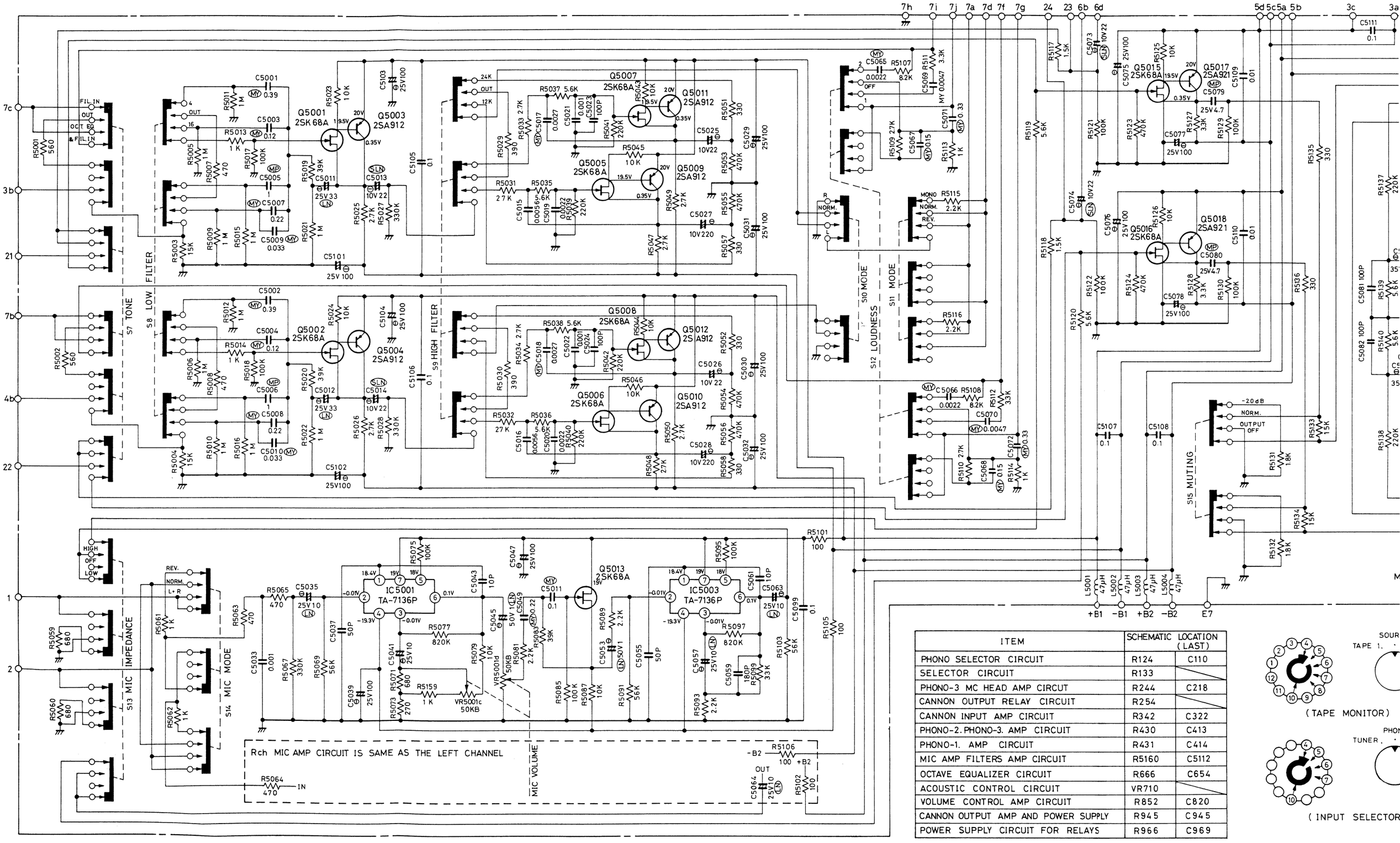
- UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITANCE VALUES ARE EXPRESSED IN MFD.
- VOLTAGE READING WITH VTVM FROM THE POINT SHOWN TO THE CHASSIS GROUND (LINE VOLTAGE 117 VOLT)
- VOLTAGE READING MAY VARY ±20%.

SHEET 2 of 4

MODEL RC-5000 SCHEMATIC DIAGRAM

Schematic Diagram
Schaltungsschema
Diagramme schématique

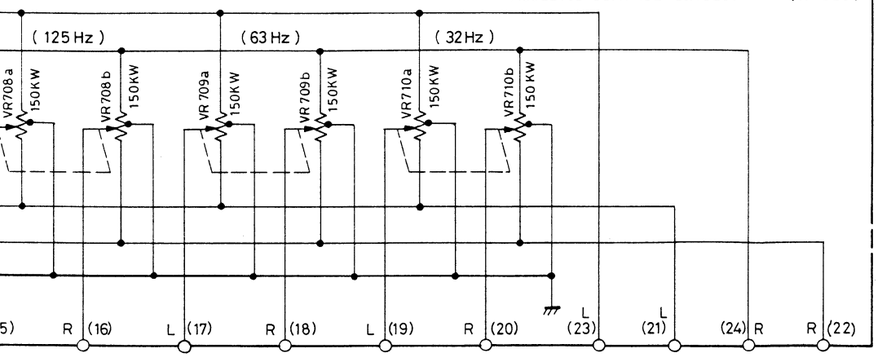


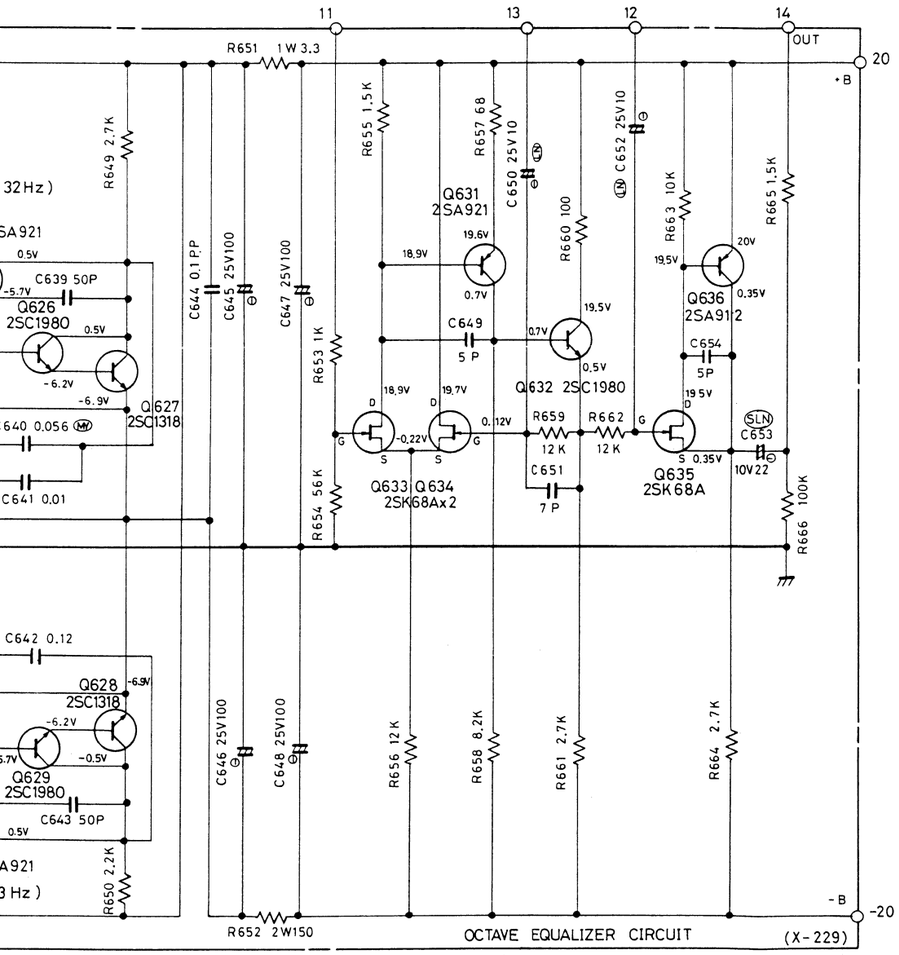


ITEM	SCHEMATIC LOCATION (LAST)	
PHONO SELECTOR CIRCUIT	R124	C110
SELECTOR CIRCUIT	R133	
PHONO-3 MC HEAD AMP CIRCUT	R244	C218
CANNON OUTPUT RELAY CIRCUIT	R254	
CANNON INPUT AMP CIRCUIT	R342	C322
PHONO-2. PHONO-3. AMP CIRCUIT	R430	C413
PHONO-1. AMP CIRCUIT	R431	C414
MIC AMP FILTERS AMP CIRCUIT	R5160	C5112
OCTAVE EQUALIZER CIRCUIT	R666	C654
ACOUSTIC CONTROL CIRCUIT	VR710	
VOLUME CONTROL AMP CIRCUIT	R852	C820
CANNON OUTPUT AMP AND POWER SUPPLY	R945	C945
POWER SUPPLY CIRCUIT FOR RELAYS	R966	C969

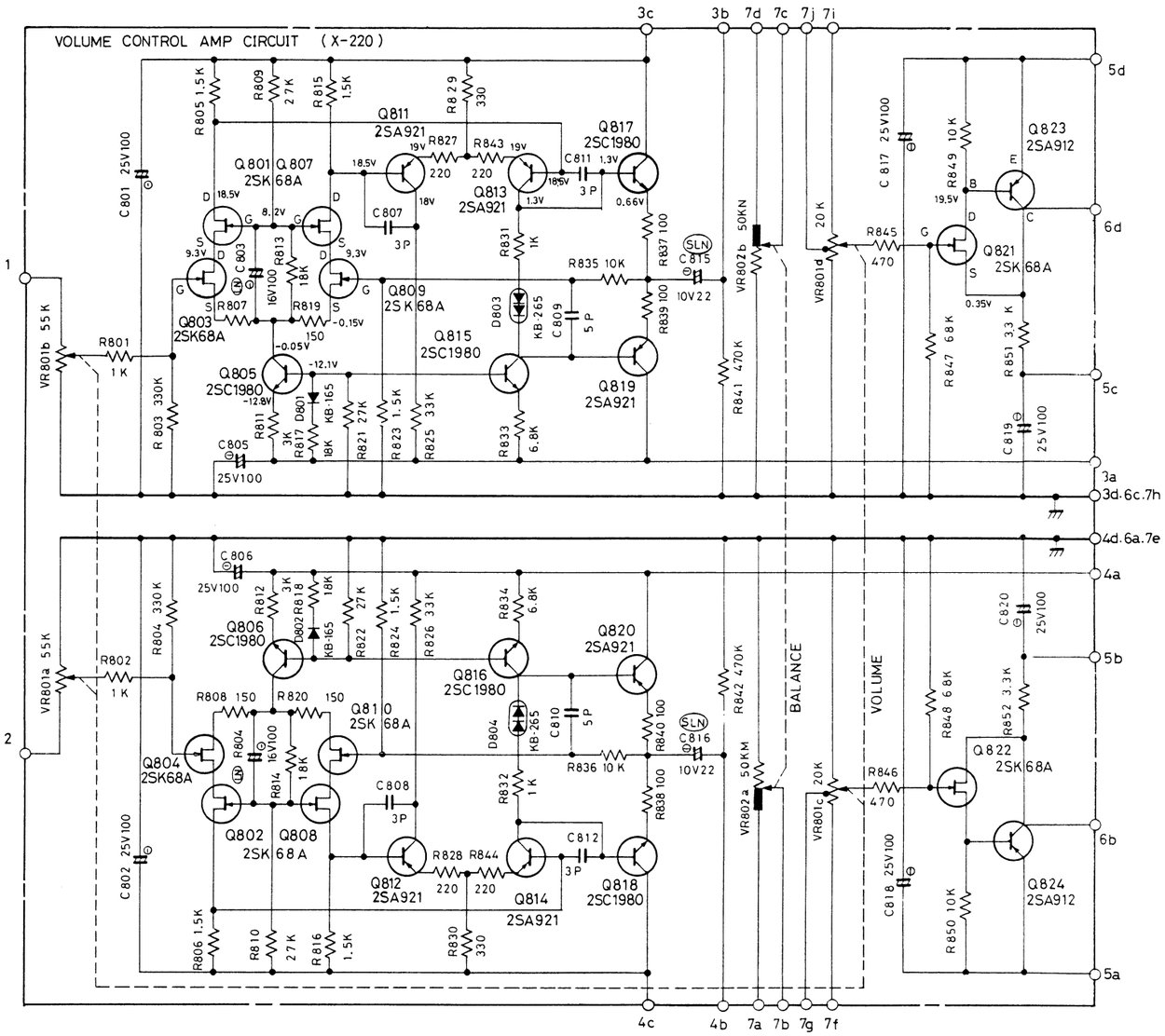
G H

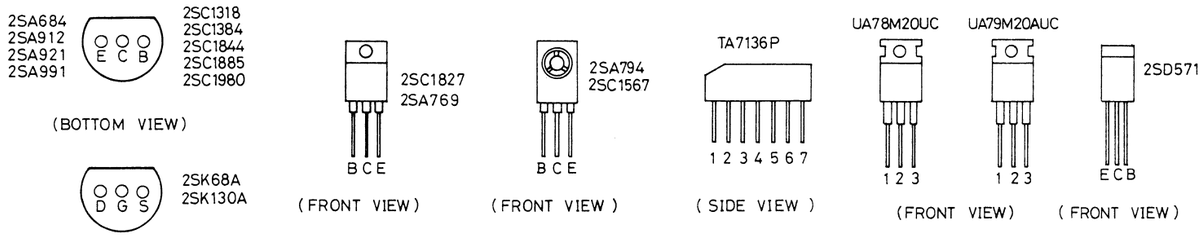
ACOUSTIC CONTROL CIRCUIT (X-228)





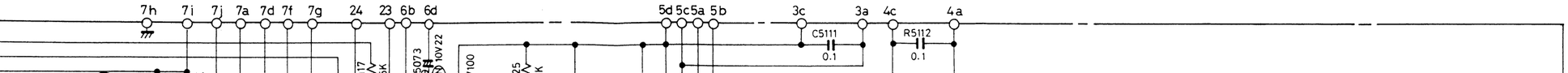
VOLUME CONTROL AMP CIRCUIT (X-220)



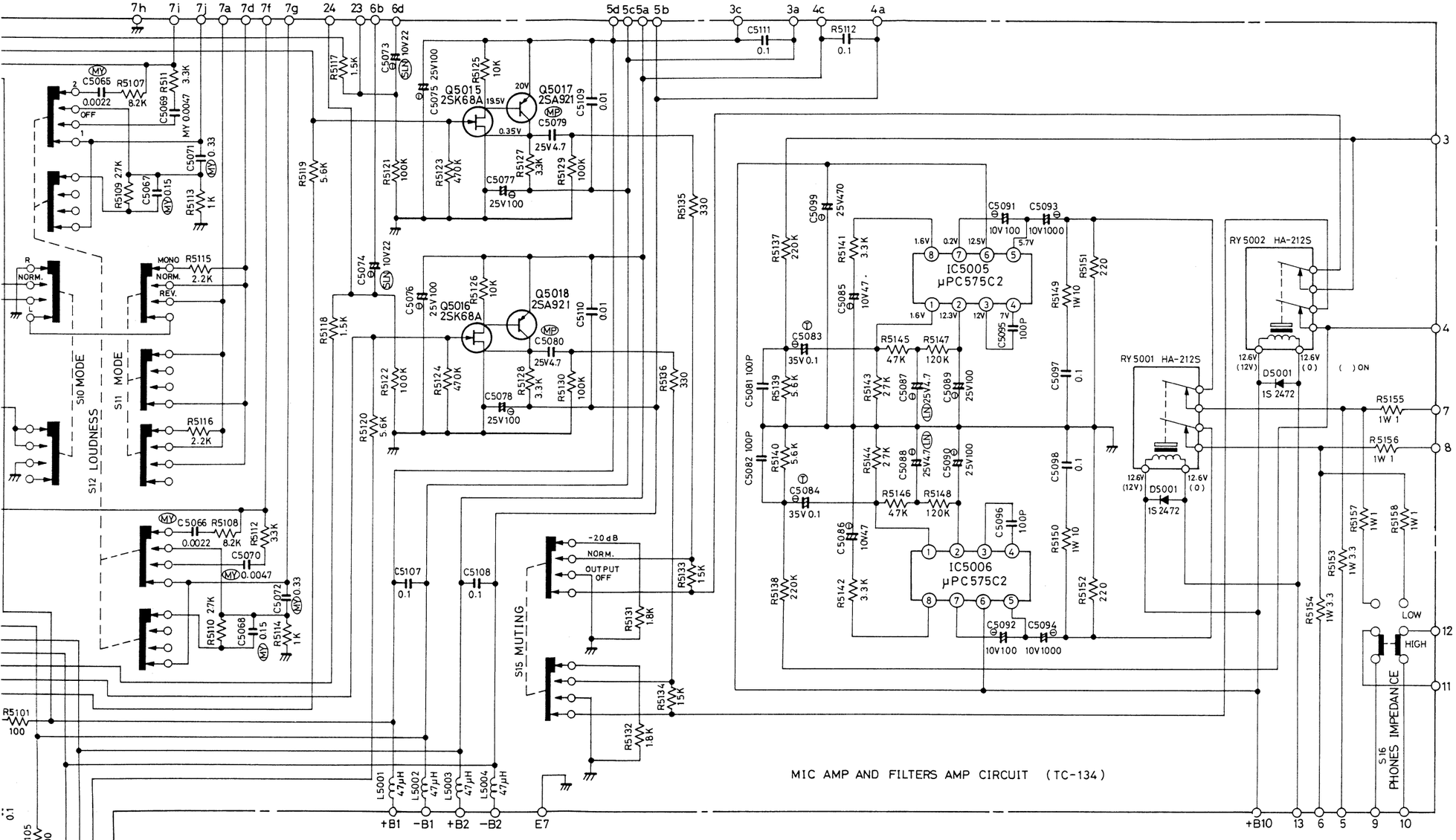


SHEET 3 of 4

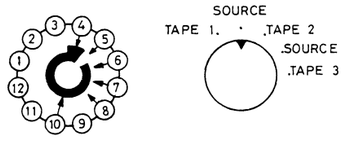
MODEL RC-5000 SCHEMATIC DIAGRAM



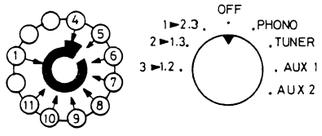
OCTAVE EQUALIZER CIRCUIT (X-229)



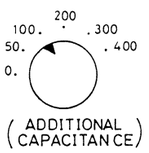
ITEM	SCHEMATIC LOCATION (LAST)	
PHONO SELECTOR CIRCUIT	R124	C110
SELECTOR CIRCUIT		
PHONO-3 MC HEAD AMP CIRCUT	R244	C218
CANNON OUTPUT RELAY CIRCUIT	R254	
CANNON INPUT AMP CIRCUIT	R342	C322
PHONO-2. PHONO-3. AMP CIRCUIT	R430	C413
PHONO-1. AMP CIRCUIT	R431	C414
MIC AMP FILTERS AMP CIRCUIT	R5160	C5112
OCTAVE EQUALIZER CIRCUIT	R666	C654
ACOUSTIC CONTROL CIRCUIT	VR710	
VOLUME CONTROL AMP CIRCUIT	R852	C820
CANNON OUTPUT AMP AND POWER SUPPLY	R945	C945
POWER SUPPLY CIRCUIT FOR RELAYS	R966	C969

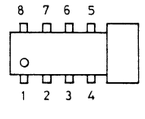


(TAPE MONITOR)

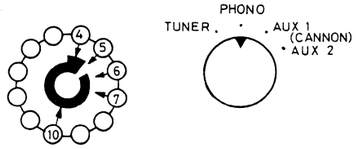


(REC OUT)

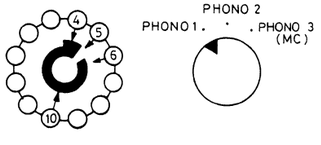




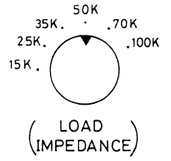
(TOP VIEW)



(INPUT SELECTOR)



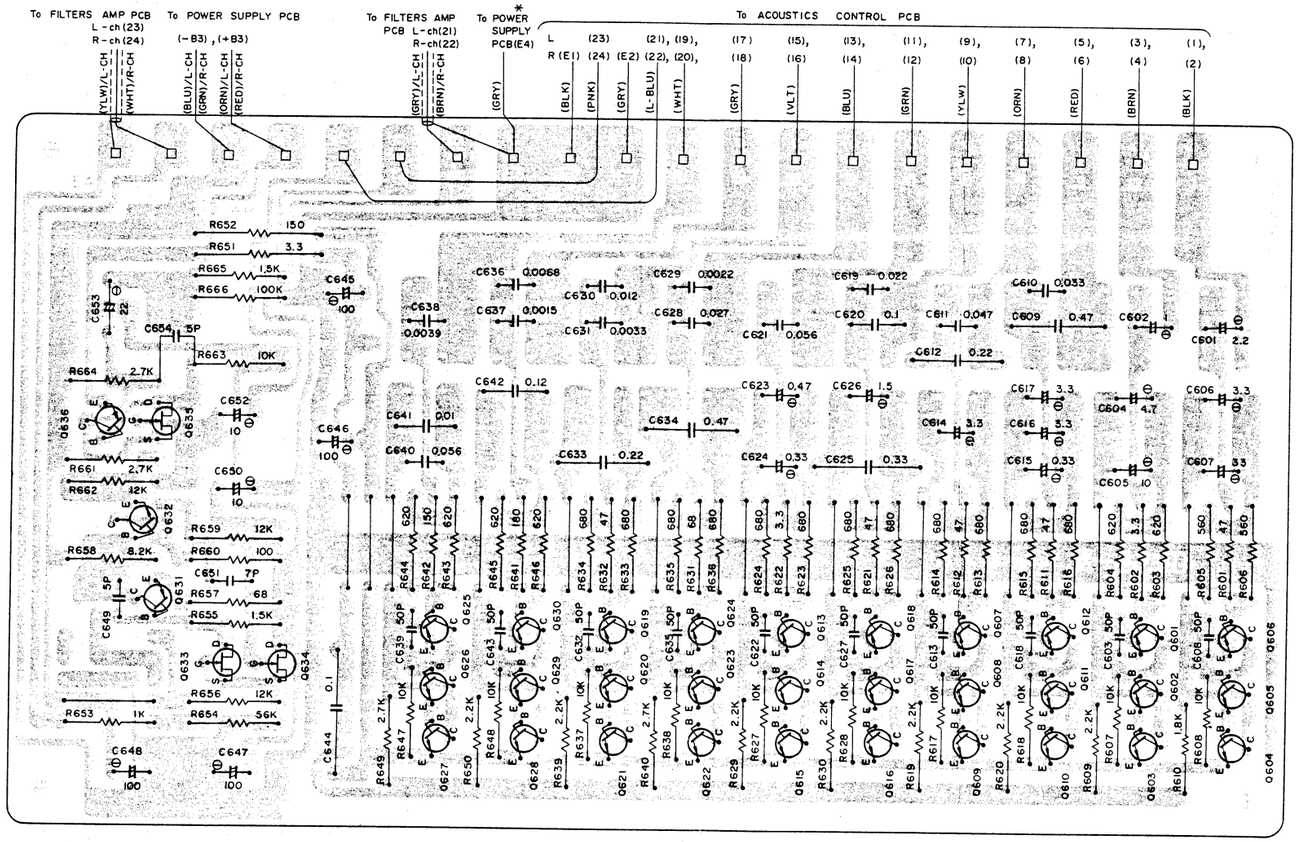
(PHONO SELECTOR)



SHEET 4 of 4

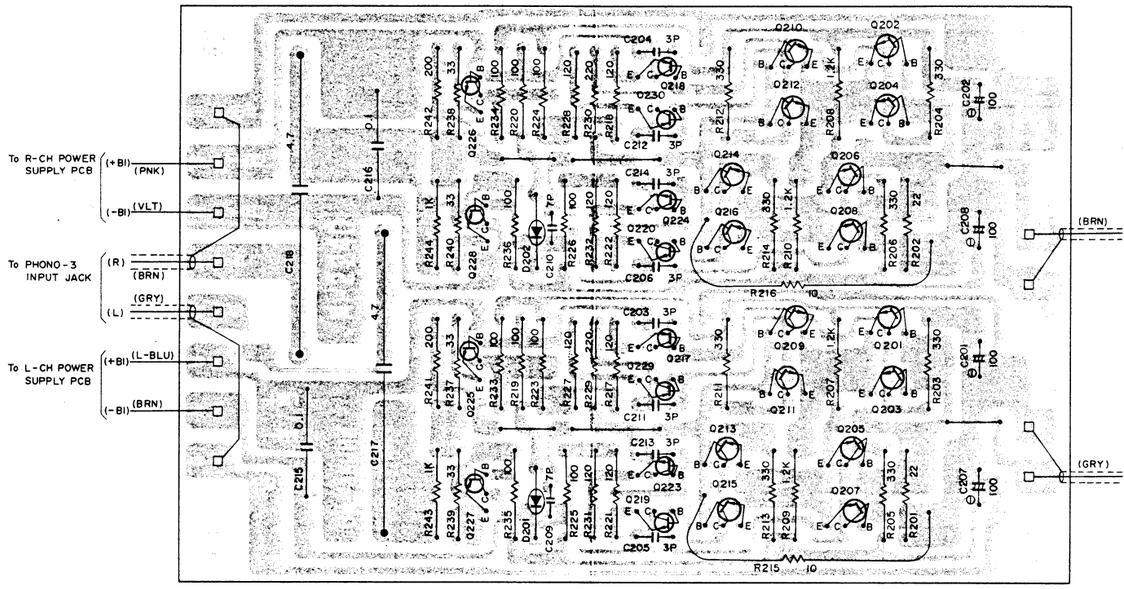
MODEL RC-5000 SCHEMATIC DIAGRAM

Octave Equalizer Circuit Board Diagram
Bestückungsplan des Oktav-Entzerrers
Diagramme de la plaquette de l'égalisateur de fréquences

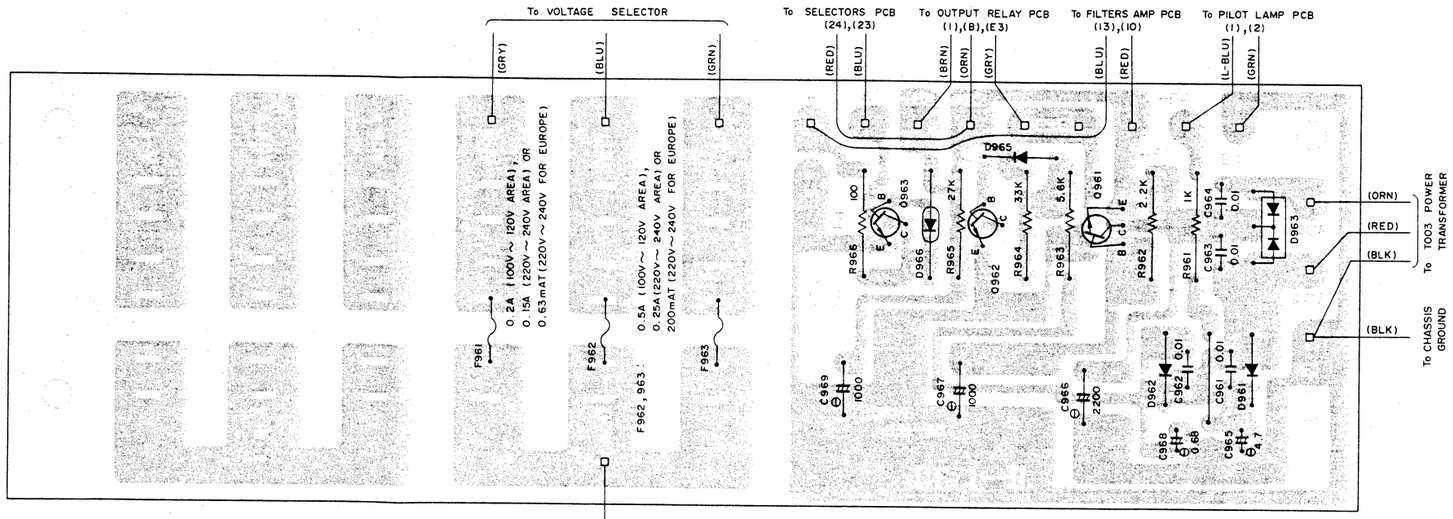


* USED ONLY FOR R-CH.

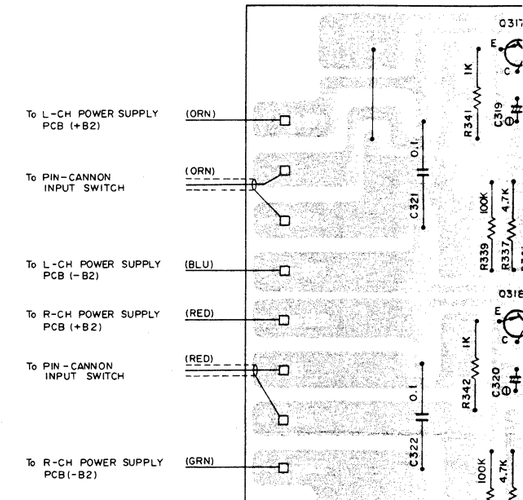
Phono-3 MC Head Amp Circuit Board Diagram
Bestückungsplan des Phono-3-Verstärkers für dynamische Tonabnehmer (M
Diagramme de la plaquette d'amplification pour cellule à bobine mobile (MC

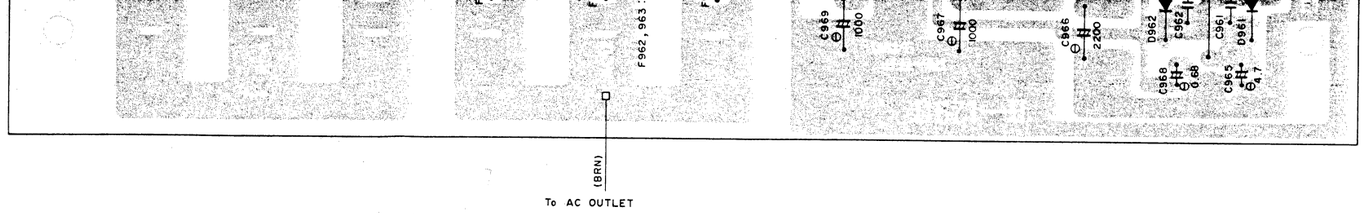

To R-CH POWER SUPPLY PCB (+B1) (PNK) (-B1) (VLT)
To PHONO-3 INPUT JACK (R) (BRN) (GRY) (L)
To L-CH POWER SUPPLY PCB (+B1) (L-BLU) (-B1) (BRN)
(BRN)
(GRY)
Q202 Q204 Q212 Q230 Q210 Q206 Q214 Q220 Q216 Q208 Q224 Q218
Q201 Q203 Q211 Q229 Q209 Q205 Q213 Q223 Q215 Q207 Q225 Q217
R216 10
R215 10
C216 4.7
C218 4.7
C215 0.1
C217 0.1

Power Supply (for Relay) Circuit Board Diagram
Bestückungsplan des Netzteils (für Relais)
Diagramme de la plaquette d'alimentation (pour le relais)



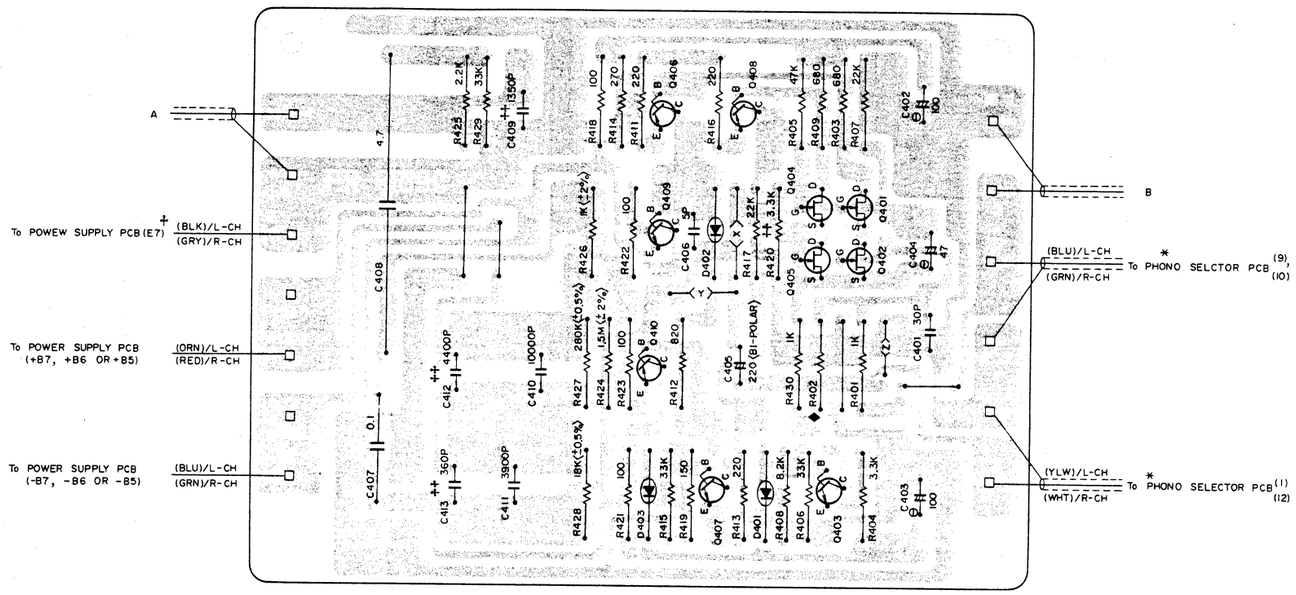
Cannon Input Amp Circuit Board
Bestückungsplan des Cannon-Eing
Diagramme de la plaquette d'amp





NOTE:
Parts layout of the units with serial numbers from NB58581 to 66157, or from R32352 to 32451 differs with this diagram, but there is no difference in electronical connection between the two layouts.

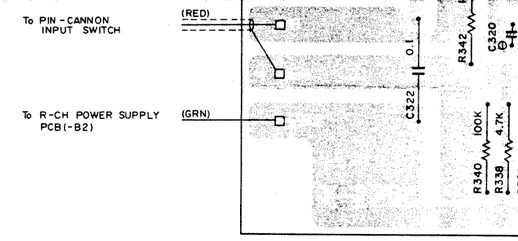
Phono-1, -2, -3 Amp Circuit Board Diagram
Bestückungsplan des Verstärkers für Phono-1, -2, -3
Diagramme de la plaquette d'amplification de Phono-1, -2 et -3



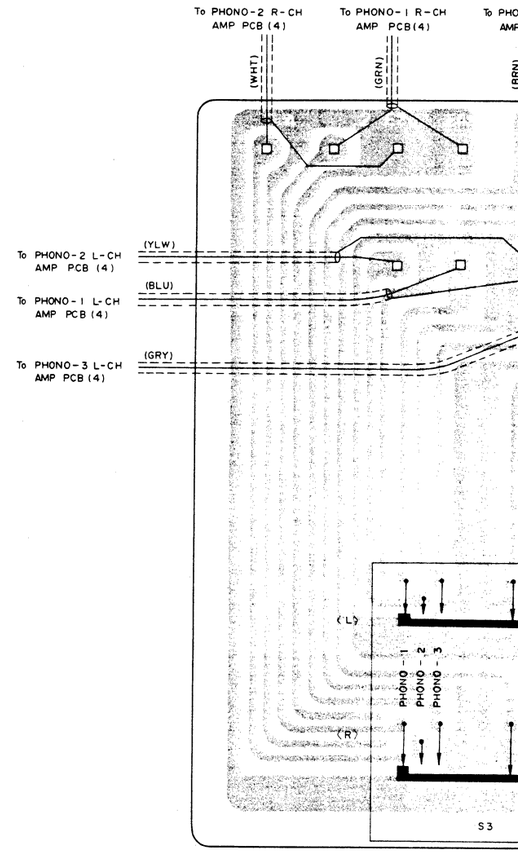
NOTES:

1. <X>: Phono-1. . . . . .C414, 17,800pF
   Phono-2, -3 . . . .R410, 330Ω
   <Y>: Phono-1. . . . . .R431, 10kΩ
   Phono-2, -3 . . . .Nil
   <Z>: Phono-1. . . . . .R431, 10kΩ
   Phono-2, -3 . . . .Shorted
2. ††C409 ⟶ 3,200pF (Phono-1)
   C412 ⟶ 4,400pF (Phono-1)
   C413 ⟶ 300pF (Phono-1)
   R420 ⟶ 10kΩ (Phono-1)
3. R402 ⟶ 330kΩ(G) (Phono-1, -3)
   ⟶ 56kΩ(G) (Phono-2)
4. (*) applies to Phono-1 circuit only.
5. Shielded wire A is not grounded (not connected to E4) for Phono-3 circuit.
6. † applies to Phono-3 circuit only.

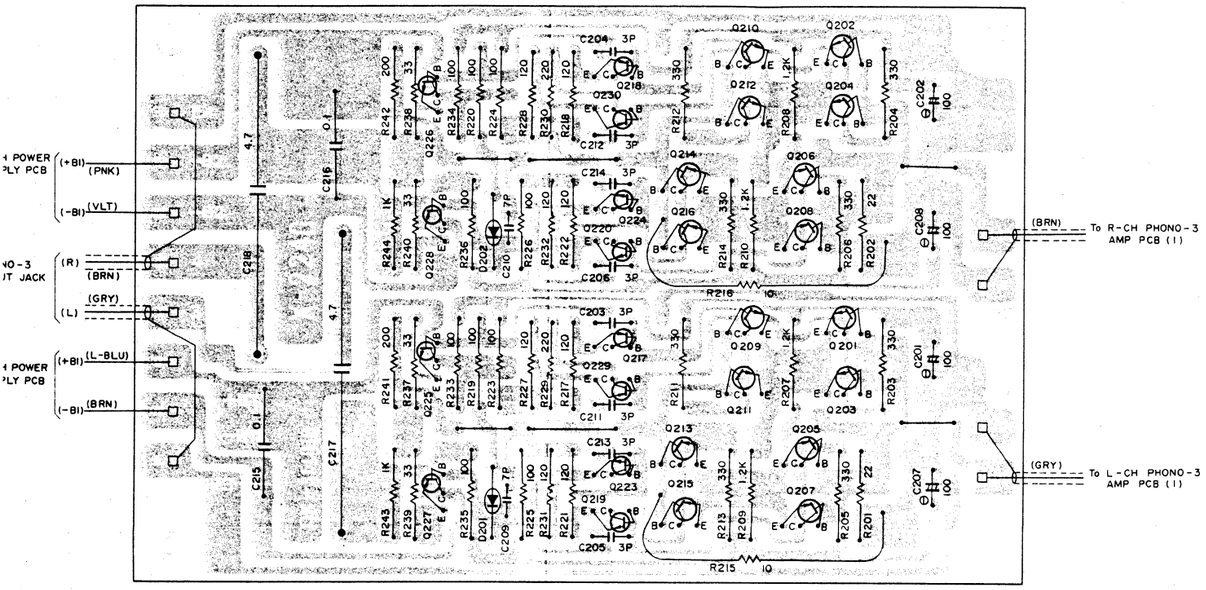
	CH	PHONO-1		PHONO-2		PHPNO-3	
A	L	BLU	To Phono Selector PC board (1): L-ch (2): R-ch	YLW	To Phono Selector PC board (3): L-ch (4): R-ch	GRY	To Phono Selector PC board (5): L-ch (6): R-ch
	R	GRN		WHT		BRN	
B	L	BLU	To Phono-1 Input Jack	YLW	To Phono-2 Input Jack	YLW	To MC Head Amp PC board (3): L-ch (4): R-ch
	R	GRN		WHT		WHT	



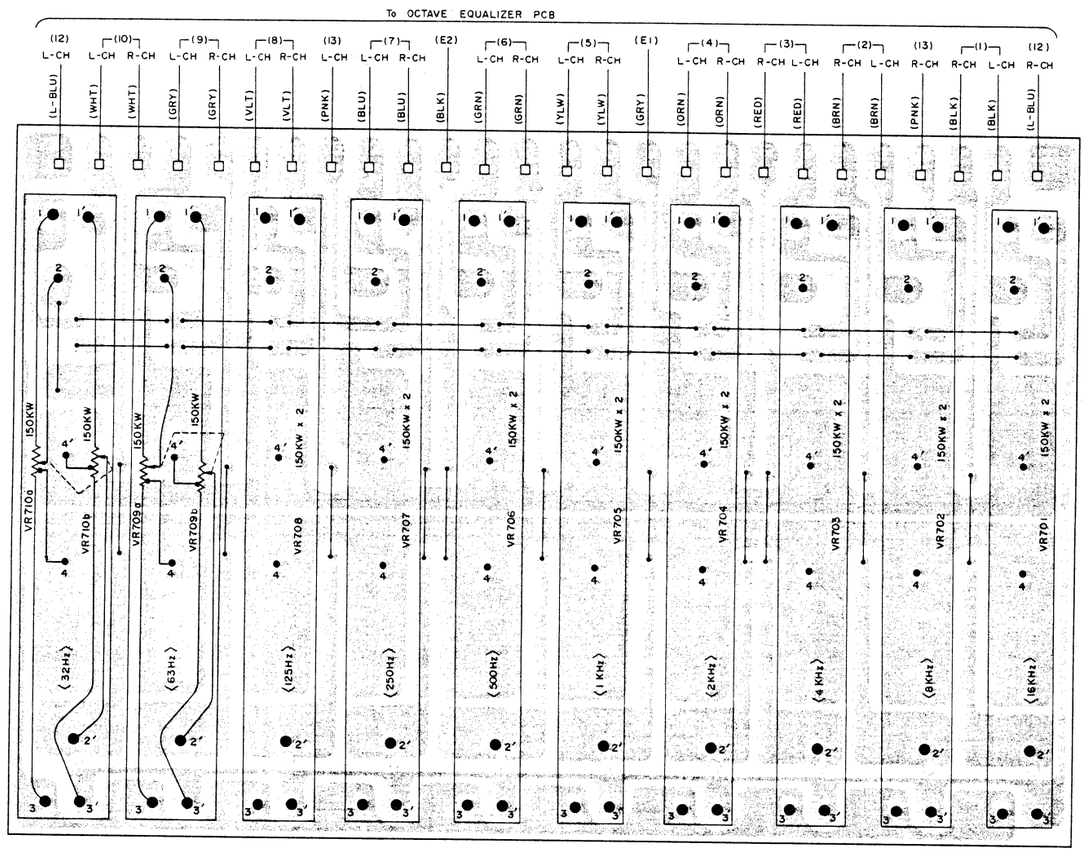
Phono Selector Circuit Board Dia
Bestückungsplan der Phonowahlsc
Diagramme de la plaquette du séle



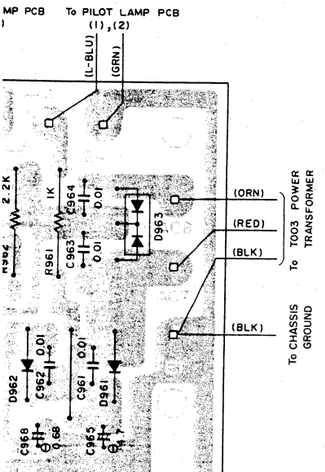
ono-3 MC Head Amp Circuit Board Diagram
stückungsplan des Phono-3-Verstärkers für dynamische Tonabnehmer (MC)
agramme de la plaquette d'amplification pour cellule à bobine mobile (MC) Phono-3

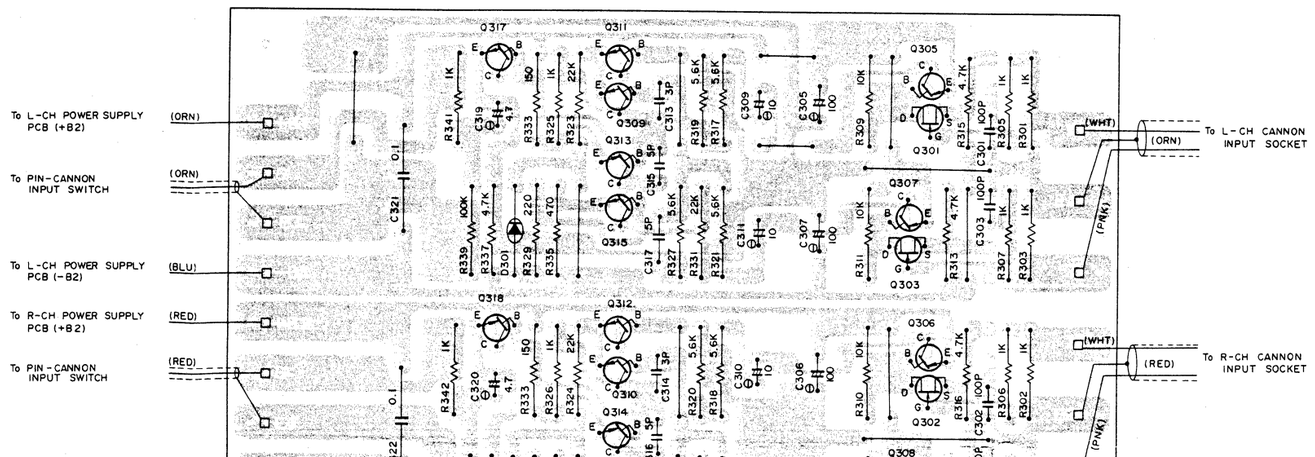


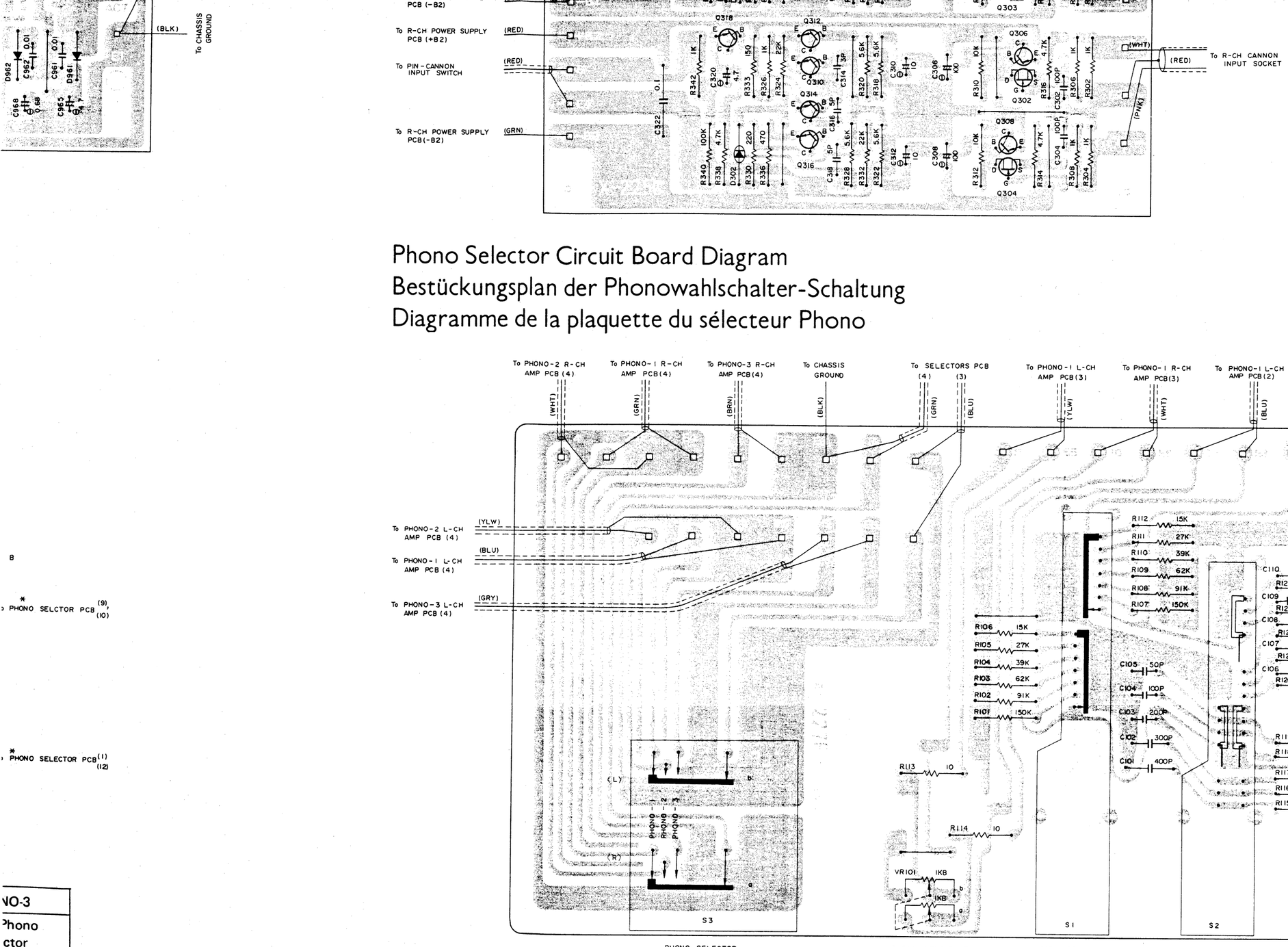
Acoustic Control Circuit Board Diagram
Bestückungsplan der Tonregler-Schaltung
Diagramme de la plaquette de commande acoustique



Cannon Input Amp Circuit Board Diagram
Bestückungsplan des Cannon-Eingangsverstärkers
Diagramme de la plaquette d'amplification de l'entrée Cannon







Phono Selector Circuit Board Diagram
Bestückungsplan der Phonowahlschalter-Schaltung
Diagramme de la plaquette du sélecteur Phono

To PHONO-2 R-CH AMP PCB (4)
To PHONO-1 R-CH AMP PCB(4)
To PHONO-3 R-CH AMP PCB(4)
To CHASSIS GROUND
To SELECTORS PCB (4) (3)
To PHONO-1 L-CH AMP PCB(3)
To PHONO-1 R-CH AMP PCB(3)
To PHONO-1 L-CH AMP PCB(2)
To PHONO-1 R-CH AMP PCB(2)
To PHONO-2 L-CH AMP PCB (4)
To PHONO-1 L-CH AMP PCB (4)
To PHONO-3 L-CH AMP PCB (4)
S3
S1
S2
PHONO SELECTOR
PHONO SENSITIVITY CONTROL
LOAD IMPEDANCE SELECTOR
ADDITIONAL CAPACITANCE SELECTOR

THE ROTEL CO., LTD.
1-36-8 OHOKAYAMA, MEGURO-KU, TOKYO 152, JAPAN

ROTEL ELECTRONICS CO., LTD.
2ND FLOOR, EVERGLORY BLDG., NO. 305, SECTION 3, NANKING E. ROAD, TAIPEI, TAIWAN, REPUBLIC OF CHINA

ROTEL OF AMERICA, INC.
1055 SAW MILL RIVER ROAD, ARDSLEY, N.Y. 10502, U.S.A.